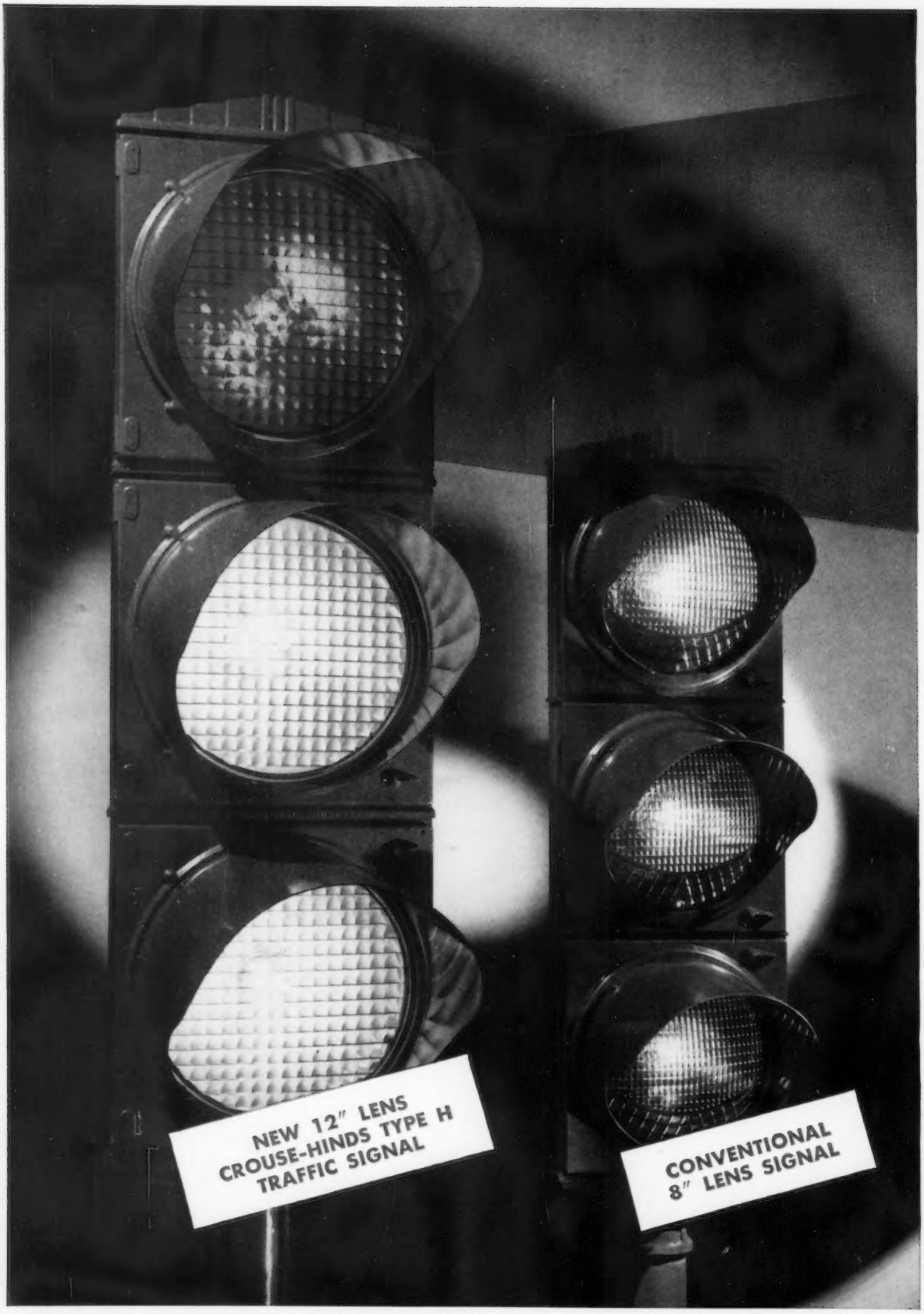
MAY, 1955

Traffic Engineering

Pavement Marking Channelization in Peoria, Illinois.

- One Year of Traffic Engineering in Peoria
- Accident Rates at Intersections
- Virginia Sign Truss

Official Publication of the Institute of Traffic Engineers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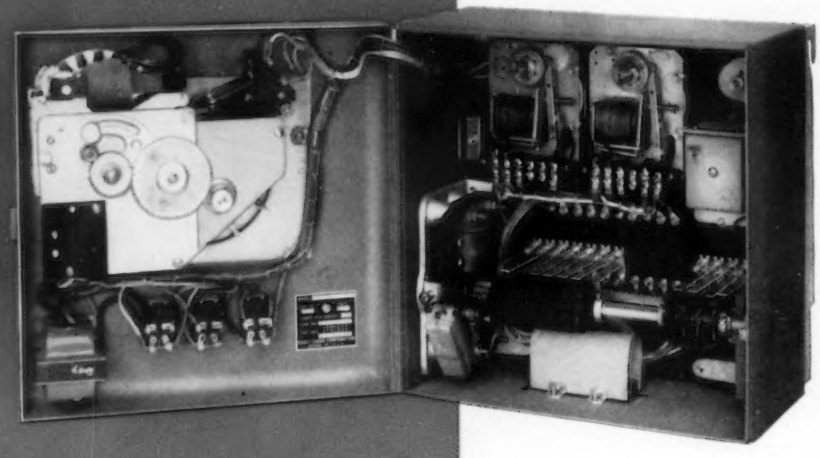

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Traffic Engineering

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COVER: Only the vehicle in the upper right is required to stop. This "T" intersection at the top of a 10% grade handles over 12,000 vehicles per day. By permitting the heavy right-turn movement shown in the picture, without requiring a stop, less than 30% of the traffic entering the intersection is required to stop. The pavement marking channelization has eliminated possible unorthodox and confusing maneuvers on the part of drivers. Be sure to read "One Year of Traffic Engineering in Peoria" by Daniel J. Hanson, in this issue.

DEFINITION: Traffic Engineering is that phase of engineering which deals with the planning and geometric design of streets, highways, and abutting lands, and with traffic operation thereon, as their use is related to the safe, convenient, and economic transportation of persons and goods.

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PARKING METERS

Frankly Speaking

WE HAVE CHOSEN for our theme a matter that is considered by the writer one of the most important developments in the history of the profession and its parent organization, the Institute of Traffic Engineers. We refer specifically to Item 10 of the Secretary-Treasurer's report on the January meeting of the Board of Direction, published on Page 198 of the February issue of this publication.

Earlier "Frankly Speaking" editorials of the current Institute year have stressed the phenomenal growth of the Institute and its many successful achievements in advancing the development of the Traffic Engineering profession. It is now an established fact that we have reached maturity and have literally "outgrown" our present National Headquarters. It is, therefore, imperative that the Board take steps to move our National Office to a permanent site.

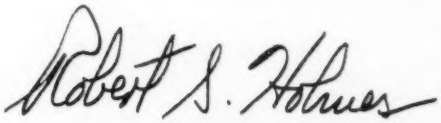
This is not the first time that the subject has appeared on the Board agenda. A thorough study was made by a special Board Committee in 1950 and a tentative decision made at the June meeting of that year to move the following year. Unfortunately, the Korean conflict and subsequent budgetary restrictions intervened and the project was temporarily abandoned.

We are now hopeful of reaching a decision at an early date and the new Committee of the Board is diligently compiling all the necessary information for final Board action. The substantiating reasons for the move have essentially remained unchanged during the last five years. The most critical element is the fact that present facilities at Yale University are now entirely inadequate for efficient operation and there is no possibility of expanding them in the foreseeable future.

It is further recognized by the Board that an acceptable location in a key city would make Institute Headquarters more readily accessible to the membership and, in turn, give the Executive Secretary greater opportunities for contact with individual members and with local sections. In other words, a city will be selected wherein it is anticipated many members would visit on Institute or related business during the year. This focal point would also have excellent transportation facilities, thus allowing for overnight visitation to local section meetings by members of the Headquarters Staff.

The Board is also fully cognizant of the need for expanded public relations activity and the need for a headquarters site which would permit direct contact and liaison with allied National organizations with which the Institute cooperates in matters of mutual interest and concern.

In the final analysis, the Institute is now a self-supporting organization and is gaining increased National prestige and recognition. It should, therefore, at the earliest opportunity, cease to be a "stepchild" of a supporting organization and stand on its own feet as an independent, authoritative center for the dissemination of information on the Traffic Engineering profession.



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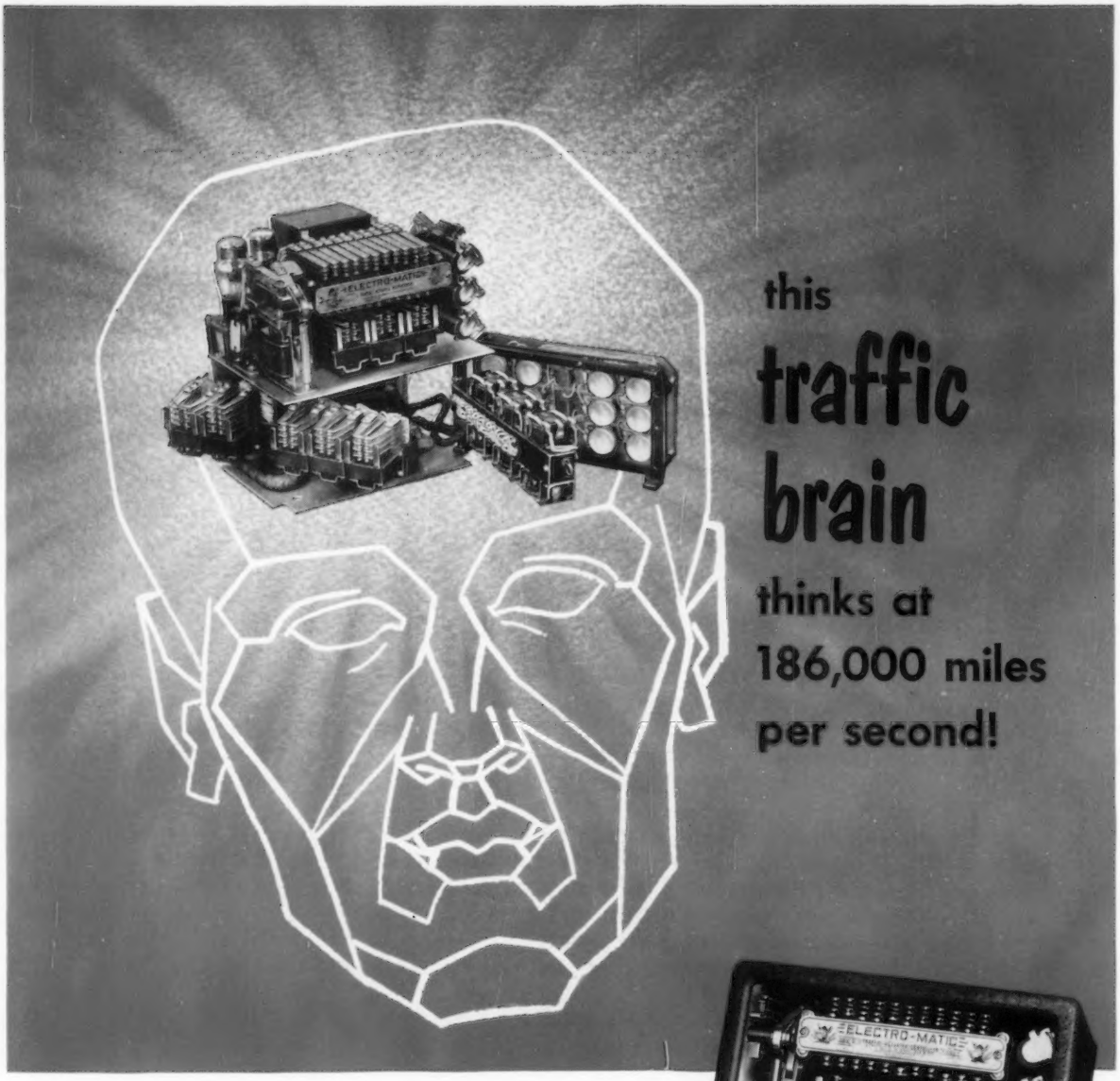

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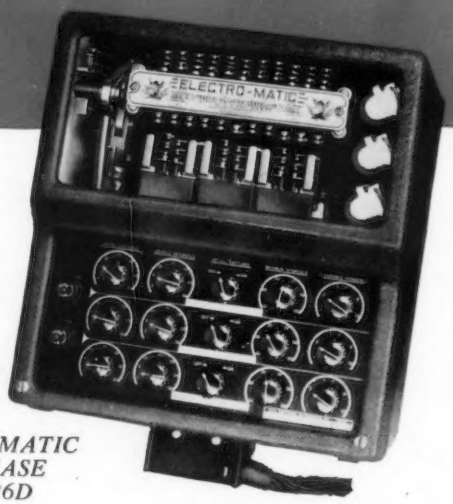

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One Year of Traffic Engineering in Peoria

By Daniel J. Hanson (Assoc. Mem., ITE)

City Traffic Engineer, Peoria, Illinois

PEORIA, THE SECOND LARGEST CITY in Illinois, was selected by the National Municipal League and *Look* magazine as an "All-America" City in 1953 for "progress achieved through intelligent citizen action." The adoption of the Council-Manager form of government, the selection of an extremely high caliber City Council, and the drive against vice and gambling were major reasons for the honor. The new Council, consisting of a mayor and eight councilmen, all elected at large, was inaugurated in May, 1953. Two months later George E. Bean, at that time president of the International City Manager's Association, was selected as City Manager.

One of the first projects undertaken by the City Manager was the streamlining of the Public Works Department. Out of this reorganization came the creation of the Traffic Engineering Department. In December, 1953, Peoria hired its first Traffic Engineer, and this is the story of the first year of traffic engineering in this city of 113,000 population, with 1,570 intersections and 230 miles of streets within its 14 square miles.

Organization

Early in 1954 a city ordinance was passed establishing the Traffic Engineering Department and placing it on the

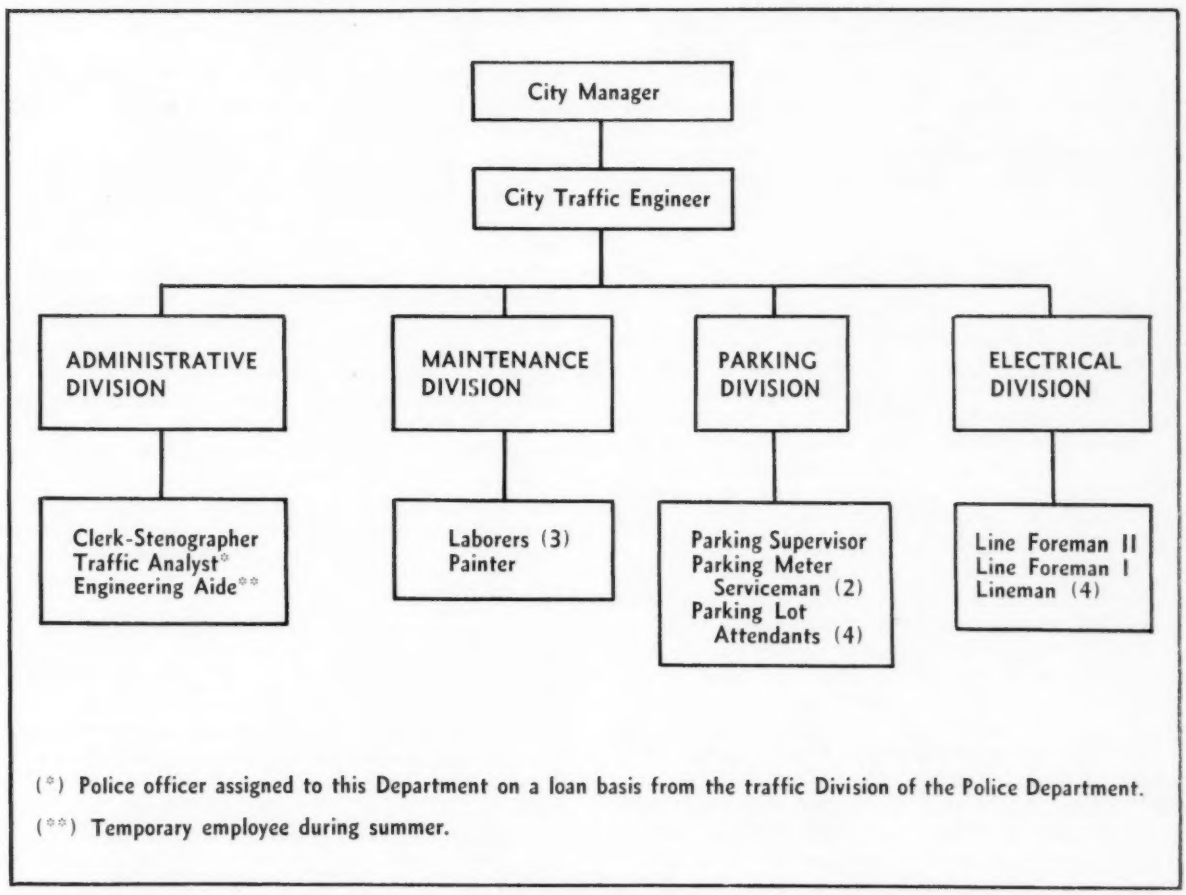


Fig. 1
Organizational Chart
Traffic Engineering Department
Peoria, Illinois

same administrative level as all other major departments. This ordinance provided that:

> "The Traffic Engineer shall be the Director of the Department of Traffic Engineering and the said Department shall, under his supervision, (1) determine the installation and proper timing and maintenance of traffic control devices; (2) conduct engineering analysis of traffic accidents and devise remedial measures; (3) conduct engineering investigation of traffic conditions; (4) plan the operation of traffic on the streets and highways of the City of Peoria; (5) operate and maintain all municipal parking lots, parking areas and parking meters; (6) supervise traffic maintenance activities, including painting, erection and maintenance of signs and markers, and painting lane markers, crosswalks, and other traffic markings; (7) maintain and keep in repair the electrical facilities of the City; and (8) carry out the additional powers and duties imposed by other provisions of this Code."

In addition, the City Traffic Engineer serves as chairman of the City Traffic Commission and has to confer with police and other public officials relating to traffic problems.

All curb opening requests for commercial driveways are reviewed and approved by the Traffic Engineer before the permits are issued.

Budget

The Traffic Engineering Department consists of four divisions as follows: Administrative; Maintenance; Parking; and Electrical. (See Figure 1.)

The Department budget for 1954 totaled $207,078.60, including appropriations for the installation of new street name signs and for traffic signal installations. The budget was broken down as follows:

Administrative Division	$ 7,338.00
Maintenance Division	37,804.00
Parking Division	47,288.12
Electrical Division	46,020.00
Street Sign Installation	30,000.00
Traffic Signal Installations	38,628.48
Total	$207,078.60

ADMINISTRATIVE DIVISION

Accident Studies

The No. 1 objective of the department is accident reduction. A large map is maintained showing all locations at which five or more accidents occurred during the year, plus the locations of all fatal accidents.

Last year collision diagrams were made at 167 of these high-accident-frequency locations showing all pertinent factors. In addition, condition diagrams were drawn showing all existing physical conditions and any other factors that might have a bearing on the accident experience.

All of this information, along with other accident statistics, is a useful tool in pointing up locations which should receive special attention before they become so hazardous that serious accidents and injuries result. In addition, when all the accident facts are put in their proper relationship to the city as a whole, it is possible for the Traffic Division of the Police Department to formulate a sound accident prevention program on the basis of selective enforcement techniques. (Figure 2.)

The year 1954 produced the least number of fatalities in Peoria as far back as 1929 when accident reporting began. The three persons killed last year represent a 77 percent reduction over 1953 when 13 persons lost their lives. At the same time the total number of accidents was reduced over 6 percent, from 3,019 to 2,825, with a 12 percent reduction in pedestrian accidents. Based on National Safety Council estimates, the savings to the community by these reductions amounted to $300,000.00.

Photo Courtesy Peoria Star Journal

Fig. 2

The City Traffic Engineer and the Lieutenant of the Traffic Division of the Police Department examine, in the city paint shop, one of the 13 fully reflectorized warning signs erected on major entrances to the city prior to the use of radar speed checking equipment. The radar machine was responsible for the apprehension of over 3,000 speeders in its first year of operation.

Investigations

Telephone calls, letters, and personal contacts bring to the attention of the Traffic Engineer numerous traffic problems throughout the city. A policy has been adopted that no complaint is too minor to investigate. Consequently, almost every one requires at least a quick investigation in the field. All complaints and suggestions are recorded on a special form and kept in an appropriate file. They may vary in nature from requests for parking restrictions and one-way streets to requests for traffic signals or turn restrictions. Even though the complaint may be unfounded or the suggestion unsound, the initiating person is always contacted and informed as to the disposition of the case and thanked for their interest in the traffic program. Keeping the public informed is an essential part of any truly successful traffic program.

Restricted Visibility

Last year a vigorous campaign was conducted through radio, TV, and newspaper publicity to obtain cooperation in the elimination of accident hazards caused by high hedges, weeds, shrubbery, and other restrictions to visibility.

Over 100 property owners and residents were personally contacted by this office seeking their cooperation in the removal of these hazards which cut off drivers' visibility and render useless various traffic signs and signals.

A checkback on this project indicated that over 70 percent of the people contacted voluntarily cooperated by removing the hazard. In accordance with this program, the City Council adopted the following amendment to the Zoning Ordinance:

Fig. 3
One of the first three smartly dressed women hired to perform adult crossing guard duty in Peoria. She is stationed at a dangerous intersection on Illinois Route 116 which handles over 18,000 vehicles per day.

"On a corner in any residential district, no fence, hedge, earth terrace, parking facilities, or other structure or plant which would obstruct motor vehicle visibility of traffic approaching the corner or intersection shall be erected, placed, or maintained within the triangular area formed by the intersecting lot lines nearest the street intersection and a straight line joining said lot lines at points which are 15 ft. distant from the point of intersecting lot lines."

Ordinances and Permits

During 1954 a total of 31 ordinances were passed relating to traffic regulations. These ordinances covered everything from rush-hour parking controls to the hours that parking meters are to be in effect. One ordinance revised the City Traffic Code in order to conform to State and uniform regulations relating to parking as follows:

	Old City Ordinance	*Revised City Ordinance*
NO PARKING	7′	15′ (of a fire hydrant)
AT ANYTIME	15′	20′ (of a crosswalk)
WITHIN —	20′	30′ (of a traffic control device)

Another ordinance abolished designation of bus stops and loading zones by the painting of the curb and in place provides that standard traffic signs are to be erected stating the regulation and hours it is in effect.

Another amendment passed last year, relating to driveways, establishes standards for curb opening permits. The important points in this ordinance are:

1. Driveways for exclusive residence or dwelling house may be a maximum of 15′ in width measured at the curb line.
2. Driveways for parking lots, public garages, gas stations, and other commercial use may be 30′ (under unusual conditions a maximum of 40′ is permitted) and two openings are permitted on the major street, provided a minimum of 10′ of curbing exists between the two openings.
3. On corner lots, the combined curb opening on both streets shall not exceed 80′. (The accepted practice is two 30′ openings on the major street and one 20′ opening on the minor street).
4. No portion of a driveway opening shall be constructed within 6′ of the property line extended.
5. In cases of present non-conformance with the new curb cut provisions and where construction work, such as widening, resurfacing, or other substantial alterations are to be made, the improvement shall be designed to comply with the regulations.

Previously the City Council was required to review every curb cut request regardless of size. Presently only a person desiring a curb cut in excess of limitations established must apply to the City Council for approval before the permit is issued. Last year only two such applications were made out of a total 67 curb opening permits issued, indicating that the present ordinance is effectively handling the situation.

Surveys

Traffic surveys and factual information of any type were almost non-existent at the time of the creation of the Traffic Engineering Department. Almost six months were spent in compiling the necessary data on which to base an action program. In order to obtain the needed information, assistance was obtained from civic, service, school, and other groups. This not only saved a large sum of money but also brought more than 200 people in direct contact with the traffic program, and encouraging a healthy atmosphere. The impressive list of cooperating agencies includes the Junior Chamber of Commerce, the Association of Commerce, P.T.A. groups, Peoria Transit Lines, the Central Illinois Light Company, the Peoria Association of Insurance Agents, Bradley University, Illinois Division of Highways, and many others, too numerous to mention in this short space.

Last year well over 3000 man hours were donated to assist in the accumulation of data needed for the following major surveys:

Off-Street Parking Survey
Vehicular and Pedestrian Volume Survey of the Central Business District
Parking Meter Survey of the Central Business District
Recommended City-Wide Through Street Plan
School Crossing Protection Survey

All of these surveys and findings were published in report form and were widely distributed. These surveys, along with copies of the Traffic Engineering Department annual report, are available upon request for anyone who may be interested.

City-Wide Through Street Plan

As far back as 1930 the National Safety Council had this to say after making a traffic survey in Peoria: "Through streets and stop intersections in this city are far too numerous and disconnected. Citizens cannot visualize such a system; they are obliged to stop so often and to such small purpose that they think lightly of it. Enforcement under these circumstances is practically hopeless."

A year later, in 1931, the Chicago Motor Club Highway Department made a report to the Mayor of Peoria in which it said: "Over 600 stop signs are in use in Peoria, of which a large percentage are frequently disobeyed. The superabundance of these signs is one of the chief causes of this disregard."

In 1948 a report from the Accident Prevention Department of the Association of Casualty and Surety Companies read: "The installation of stop signs in Peoria represents one of the outstanding weaknesses in the physical control of traffic in the city. Over a period of years the lack of factual analysis of stop sign proposals has resulted in numerous unwarranted installations of stop signs controlling major street traffic. These signs have been the cause of thousands of hours of unnecessary delay and undoubtedly have been the cause of many traffic accidents."

At the time of the creation of the Traffic Engineering Department a total of 1,379 stop signs were located in Peoria at 42 percent of the 1,570 street intersections. This meant

that one or more stop signs were used to control traffic at better than 2 out of every 5 intersections. This over-abundance of stop signs developed under the previous aldermanic form of government where 22 aldermen found it very difficult to refuse any request for a stop sign within their ward.

The first step in establishing a city-wide through street plan was the gathering of all the necessary factual data, such as origin and destination surveys, traffic accident statistics, traffic volume studies, and speed surveys. Consideration was also given to the condition and width of pavements, location of bus routes, intersections where visibility is critically restricted, undesirable locations for through streets such as streets near schools and those in densely populated areas, and locations with unusual physical conditions.

Field studies, assembling of data, and detailed analysis leading up to the preparation of a 23-page report covered a period of six months and required over 2,000 man hours of clerical and technical work.

All persons who were engaged in this survey were carefully chosen as to their qualifications and ability to do this type of work and some special training was given each one before being assigned to duty. Every possible precaution was taken to assure complete accuracy in gathering the information.

Manual traffic volume counts, of a minimum duration of 4 hours, were made at 171 locations. Speed studies were made through the cooperation of the Traffic Division of the Police Department, with their radar machine, at 77 locations on 46 streets.

Stop sign driver observance studies were made at 36 intersections scattered throughout the city in order to develop a city-wide projection of stop sign obedience. In view of the over-abundance of stop signs, the findings were somewhat as expected. A total of 4,267 vehicles was observed, of which 900, or only 21%, made a full stop. The results can be further broken down as follows:

	Vehicles	*Percent*
Voluntary Stop	599	14%
Stopped for Traffic	301	7%
Entered Intersection Slow (0-5 m.p.h.)	1,792	42%
Entered Intersection Fast (over 5 m.p.h.)	1,575	37%

Upon careful review of all the facts, the removal of 310 stop signs at isolated intersections and on undesirable through streets was recommended.

The City Council gave approval to this plan and to date a total of 267 stop signs have been removed. This program has been widely publicized in the newspapers, on radio and TV programs, and at numerous public meetings and talks before all types of audiences. Public acceptance of the through street program has been good and is very encouraging. Everyone agreed that there were too many stop signs in the city.

It would be "kidding" to say the removal of this quantity of stop signs has been an easy job. When it came to removing the sign at some particular "pet" locations, certain small groups opposed their removal. Careful attention is paid to "before-and-after" accident experience and to date only a half dozen trouble spots have developed.

In some cases where the change was a radical or unusual one, warning signs such as "Slow—Not a Thru Street," "Cross Traffic Does Not Stop," or other appropriate caution signs were erected. It is planned to install "Yield Right of Way" signs at some of these isolated intersections at a future date as the need may arise. A concentrated educational program will be necessary, coupled with the passage of the necessary ordinance, before embarking on a "Yield Right of Way" program.

School Crossing Protection

A city-wide school crossing survey was conducted to determine what steps should be taken to further increase safe operation at the numerous school crossings in our city. A total of 81 intersections were studied and the recommendations included such controversial items as the removal of police officers previously assigned to school crossing duty, removal of school crossing signals from locations where they were not warranted, the elimination of certain locations as crossing points for children, and removal of 4-way and 2-way stop signs used for school crossing protection.

You can well imagine the reactions these suggestions received from certain parent groups! One group of 40 mothers strong, representing one of the public housing units, stormed a City Council meeting demanding that the police officer be reassigned to school crossing duty at a mid-block location on a very dangerous curve.

In this instance the designated school crossing was relocated at a normal right-angle intersection less than 400' away and a woman adult crossing guard was assigned to duty at the location. A total of three women were hired to perform school crossing guard duty (Figure 3) and all uniformed police officers have been reassigned to more important traffic duty. This is the first time women have been employed for this type of work in Peoria and public acceptance has been overwhelmingly in favor of the program. The women are attractively dressed in black shoes, navy blue coats, white gloves, a white hat, a badge, and a white belt.

Other results of the survey were the installation of over 500 new school signs, establishment of a definite schedule for the painting of over 100 crosswalks, and the retiming of over 60% of the 39 special school crossing signals. Four of these special school crossing signals (which are two light section—solid red and flashing yellow) were removed from locations where they were unwarranted. A word should be said in that regard.

The survey recommendations wouldn't have stood a ghost of a chance of passing without some favorable public support. In order to gain this support, a 13-page Administrative Report was prepared for the City Council explaining the philosophy of school crossing protection, types of protection available, survey data, and, finally, survey recommendations. By wide distribution of the report and talks before such groups as the Board of Education, Parent-Teachers groups, the Association of Commerce, insurance agents, and other interested parties, we were able to sell the program. It should be added that the City Council is made up of individuals of extremely high caliber and their splendid cooperation in not only this project but the entire traffic program has been very gratifying.

Off-Street Parking

After 14 months of study, the City Council finally adopted an ordinance requiring off-street parking and off-street loading in conjunction with all new construction and major remodeling work. The new ordinance, patterned after the find-

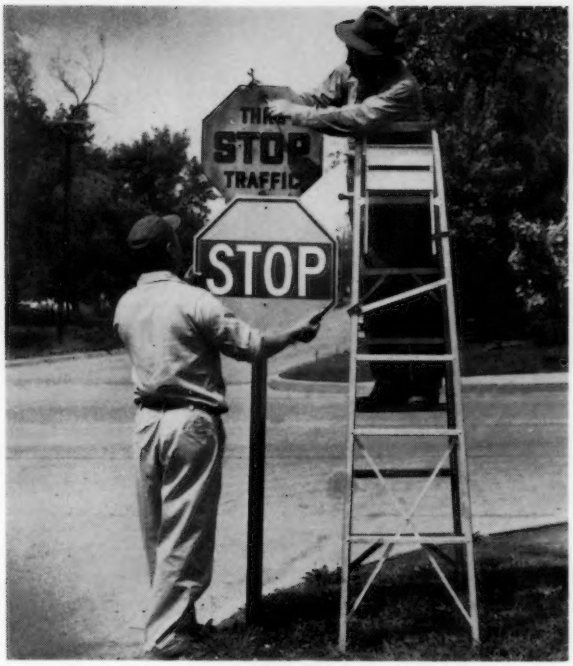


Fig. 4
One year ago over 75% of the stop signs were 18" in size and non-reflectorized. One of these signs is being replaced with a 24" sign with a 10" red reflectorized panel.

ings of the Eno Foundation for Highway Traffic Control, applies to residential, commercial, industrial, or any other land use.

No certificate of occupancy is issued upon completion of any building or major repair operation unless the off-street parking requirements are ready for use. In the case of a home builder, at least one off-street parking space is required for each dwelling unit. Other requirements are based on the number of rooms in lodging places, the number of seats in eating and drinking places, the number of employees in industrial places, and the number of square feet in retail establishments and office buildings.

This is a most important step forward in the solution of the parking problem in Peoria. However, the results of this action may not be noticeable for several years. It will probably take some time for present building occupants who are not required to have off-street parking, to fully realize the advantage their competitors have by providing adequate parking.

Maintenance Division

The Maintenance Division, consisting of one painter and three laborers, is responsible for the installation and maintenance of all street name signs, traffic signs and markers, as well as the painting of crosswalks, lane lines, center lines and other pavement markings.

Traffic Signs

Prior to the creation of the Traffic Engineering Department the few traffic signs installed each year were purchased at extremely high unit costs from local painters and sign manufacturers. No effort was made toward any type of standardization as to size, shape, wording, color combinations, or erection details. One-way signs were erected in one location at one intersection and somewhere else at the next corner.

Stop signs were erected anywhere from 1′ 9″ to 9′ 1″ above the pavement surface. Over 75% of the stop signs were 18″ in size and non-reflectorized. The City of Peoria has now adopted the 24″ all-red, fully reflectorized stop sign as its standard. To date 250 of these signs have been installed. (Figure 4.)

These signs, as well as other reflectorized signs, are manufactured in the City Sign Shop by bonding reflective sheeting to .081 gauge 61S-T6 alloy aluminum sign blanks. To do this a new 39″ heat lamp reflective sheeting vacuum applicator was purchased, and in the short time the machine has been in operation it has already paid for itself in savings in labor costs. The Sign Shop is now equipped with over 40 individual silk screens which have increased the daily sign production rate over five times. In the first year of operation over 2,300 traffic signs were installed or replaced, representing almost 50% of the entire sign plant.

In addition to the city-wide stop sign replacement program, over 9 miles of one-way streets were completely resigned according to newly adopted standards.

To facilitate the traffic sign program, a new ¾-ton sign truck, specially built, was purchased to replace an antiquated 1937 ½-ton panel truck. The new truck has two working platforms equipped with safety tread plates on top. Instead of using a shaky step ladder, the men stand on these platforms while driving posts, mounting signs, and performing other similar work. Special enclosed compartments under the platforms are used to store small tools, supplies, and parts. The body of the truck is divided into two parts. The lower section holds posts, long handled tools, and a 10′ ladder, and the upper section has a specially built rack to hold signs as large as 30″ x 30″.

Pavement Markings

Before the Traffic Engineering Department was set up, the small amount of pavement marking done was handled on a contract basis by local painting firms at an exorbitant cost to the city. In 1954, over 300,000 lineal feet of pavement markings were laid down in the form of center lines, lane lines, and crosswalks.

Crosswalks were marked at 180 locations of heavy pedestrian volumes and school crossings. Double yellow center lines and/or white lane lines were marked on 45 miles of streets. Nineteen paint test lines, laid side by side on one of the city's major thoroughfares, were kept under close surveillance. This test was conducted in order to compare the different products under similar conditions in order to form a basis on which to award the 1955 contract.

The vendor whose material produces the lowest cost-per-foot-per-day of useful life will be recommended to receive the award of the 1955 paint contract. The factors included are: Price per gallon of paint; ease of application; application cost; length of useful life; feet of line covered per gallon of paint; and drying time of the material.

Street Name Signs

Less than 15% of the 1,570 street intersections in the city had readable street name signs a year ago. To correct this deficiency a city-wide study was made by the Junior Chamber of Commerce. This study showed the need for over 4,000 new street name signs. After exhaustive research on factors such as legibility, durability, initial and maintenance costs, the City of Peoria decided to purchase what is commonly called the "Chicago" style street name sign. This

BEFORE — Street Sign Installation.

AFTER — Street Sign Installation.

Fig. 5

In the foreground of the "before" picture the old aluminum cut-out letter sign is only 7′ high while an old wood sign in the background is rotted away unreadable. The "after" picture shows the new porcelain enamel sign mounted on a wooden utility pole at a height of almost 10′.

sign is described in detail in an article in the May 1953 issue of TRAFFIC ENGINEERING by the inventor, Mr. Ralph Michel, Associate Traffic Engineer, Bureau of Street Traffic, Chicago, Illinois. Figure 5 shows a typical intersection before and after installation of these new signs.

The sign plate and mounting channel bracket are No. 14 and No. 12 gauge steel, respectively, and the finish is of porcelain enamel. The signs are double-faced with the same legend appearing on both sides in black lettering on a white background. The sign plate has a legend area of 5½″ x 26″ with the street name legend lettering 4½″ high and all prefixes and suffixes 2¾″ high.

All available vertical structures, such as ornamental light standards, wooden utility poles, and metal poles, within the public right-of-way were used for the erection of the signs. The signs are placed a minimum of 9′ from the bottom of the sign to the sidewalk grade. New pedestals were erected only in those cases where no suitable vertical structures existed. In these instances the mount consists of a 13′ long, 2½″ diameter galvanized pipe set in a concrete core one foot in diameter and 2½′ deep. Depending upon the type of mount, lag screws, steel bands, or galvanized bolts and nuts were used to fasten the signs.

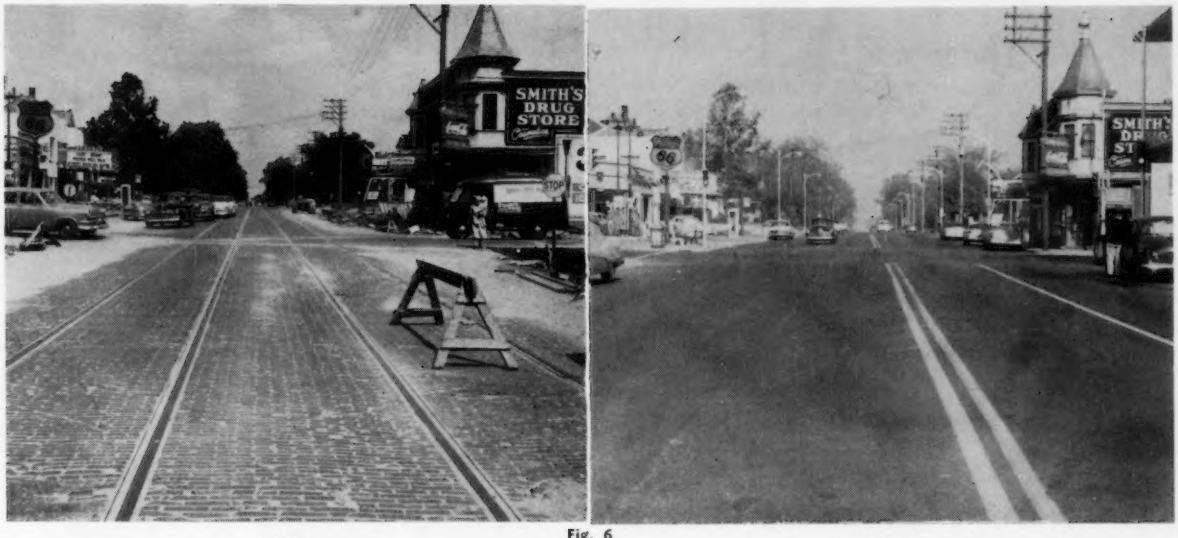
Parking Division

The Traffic Engineering Department operates a parking area on the bank of the Illinois River which is within easy walking distance of the heart of the central business district. The parking fee is 25c for any part of a day up to a maximum of 24 hours. The lot is operated from 6:30 A.M. to 4:30 P.M. 6 days per week by four attendants. Pavement markings were installed in the parking area wherever possible and other changes were made in order to provide the most efficient, safe, and orderly arrangement of the parked vehicles. The capacity of the area is 410 vehicles. During the year 1954 over 100,000 vehicles used the area, an increase of more than 15,000 vehicles over the previous year.

A total of 1,740 parking meters are installed in the central business district, divided approximately into 1,100 one-hour meters, 300 two-hour meters, and 350 four-hour meters. In each case the rate of charge is one hour of parking per nickel. Last year all the parking meter posts were painted and individuallly numbered. This numbering system, along with a much improved system of checking for faulty meter operation, has gone a long way in the reduction of meter complaints. Last year an average of less than 8 meter complaints were received per day all of which were checked within a maximum of 24 hours after receipt of the complaint.

A complete curb parking survey of the central business district was conducted last year. The recommendations based upon this study included the changing of the then-existing time limits at 17 locations and required the conversion of approximately 350 meters. At the same time 86 meters installed in violation of the City Traffic Code, at locations such as too close to a fire hydrant, crosswalk, or traffic signal or at other places not in the best interests of safety, were removed.

At some locations where parking meters had been installed it was deemed advisable to restrict parking for the specific use of taxicabs or commercial vehicles. Curb loading zones for trucks are granted only in case where off-street or rear entrances to the commercial establishments do not exist. During the year all these zones were properly designated with new signs stating the purpose for which the zone was established and the hours and days it is in effect. This has been a big improvement, particularly from the enforcement standpoint, as compared to the previous practice of designating the zones by painting the curb either yellow or red. Under the curb-painting system, all restric-



BEFORE. Fig. 6 AFTER.

Widening and resurfacing of U. S. Route 150 (previously Ill. Rt. 88) completed during 1954 included the installation of traffic signals at one of the major cross streets. This route handled less than 11,000 vehicles/day before construction and less than 9 months after the improvement is carrying over 13,000 vehicles/day.

tions applied 24 hours, 7 days a week, by necessity, and motorists were not always sure as to the reason for the restriction.

Electrical Division

The Electrical Division of the Traffic Engineering Department is responsible for the maintenance, upkeep, repair, and modernization of all the electrical facilities of the City of Peoria. This includes all city buildings, bridges, police and fire alarm systems, traffic control devices, and other miscellaneous items. In accordance with a contract agreement, the Central Illinois Light Company maintains and repairs the street lighting system and also replaces all burnt-out bulbs in traffic control devices.

Short time peak-hour traffic counts indicated that existing traffic signals were timed on a hit-and-miss basis rather than to the accommodation of proportionate traffic volumes. Signal timing changes and modernization of existing traffic signal equipment were made at 31 of the 91 signalized intersections last year. Three fully actuated and two semi-actuated signals were installed at locations such as shown in Figure 6 and several pieces of fixed-time equipment were modernized.

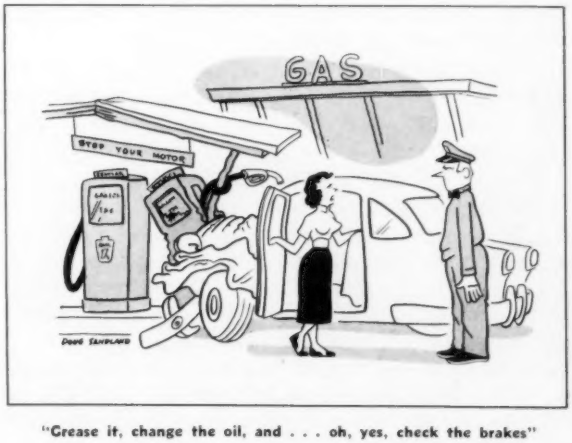
Recommendations for the erection of new traffic signals follow a priority rating based upon the recommended warrants for the installation of traffic signals and entirely excluding the previously much-used "P" warrant. A modernization program calls for the replacing of antiquated equipment, some of which is over 20 years old, with modern flexible controllers and new signal heads.

The year 1955 will see the modernization of existing traffic signal equipment at 38 intersections in the central business district, including the installation of 3 dial, triple offset, 16 interval, 19 circuit, fixed time controllers and separate pedestrian signals at 15 intersections. Under the present set-up all 38 intersections are controlled by a signal 1-dial controller and a series of relay boards. This gives a single alternate non-flexible system and a progressive speed of 13 m.p.h.

Public Relations

One of the most important phases of traffic engineering deals with informing the public of the activities of the department. Before any effective traffic improvement program can become a reality, public support must be obtained. With this thought in mind, the City Traffic Engineer attends an average of more than one meeting a week of civic and improvement associations, service clubs, school assemblies, religious groups, business groups, or neighborhood meetings in order to explain to the public ideas in regard to traffic improvements. This program has been more than worthwhile as indicated by the general acceptance of the many projects and plans advanced to date by this department.

After only one year, traffic engineering has become an important and vital part of Peoria.



"Grease it, change the oil, and . . . oh, yes, check the brakes"

Accident Rates at Intersections

By Daniel Syrek (Jr. Mem., ITE)

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IN ORDER TO INCREASE the effectiveness of its accident reduction program, the Los Angeles County Road Department, through its Accident Research Group, has been making an intensive study of the relation of collision rates to intersection traffic controls. Although the research to date has entailed over 300 separate studies of behavior at 900 intersections, the following discussion is limited in scope in order to give a less detailed account of the phenomena which have been encountered. Much supporting data, as well as modifying refinements, have thus been omitted.

Procedure Used in Study

In beginning the study of the factors affecting accident rates at intersections, it was decided to first analyze only a few types of accidents and their relation to basic controls. Accordingly, only three typical collision types—right angle, rear end, and left turn—and three methods of traffic control—two-way stop, four-way stop, and signal—were considered. Every effort was made to achieve as uniform a sample of intersections as possible. To this end, no "T" or badly offset intersections were used. To eliminate selection bias, practically all of the four-way stops and signals on the county's major road system were included, while two-way stops were selected at random from all areas, excluding those trouble spots which previous experience had shown to be abnormal or "problem" intersections. The precaution of eliminating intersections which underwent changes of alignment was observed, and at those locations experiencing considerable growth of volume, the study was restricted to a period when the traffic did not vary more than 2000 or 4000 vehicles per day on the minor and major streets respectively. The time period averaged about two years, ranging from a minimum of one year to a maximum of three. To enable a more accurate evaluation of severity, the undue weight usually given to chance occurrences of fatalities was modified by grouping the major and fatal injury accidents together. To correct for the effect of volume itself, rates were calculated on an accidents per million vehicle basis by dividing the accidents in a period by the total vehicles on both streets during the period.

Because these measures were taken, it was felt that the selected studies, containing nearly 2500 accidents occurring from exposure to 5 billion vehicles at 420 locations, accurately represented the normal accident experience at intersections on the County's major road system.

The individual histories were then grouped in various ways to determine how accident rates change with different combinations of major and minor leg volumes. The results which appear in Figure 1 seemed most accurately to reflect the relationship of total accidents per million vehicles to major street volume, minor street volume and traffic control. Rather than attempt to portray the data as sets of smoothed out curves, the rates are frankly presented as averages in each case, of those 20 to 50 intersections whose combination of street volumes placed them within the boundary limits indicated by the heavy lines.

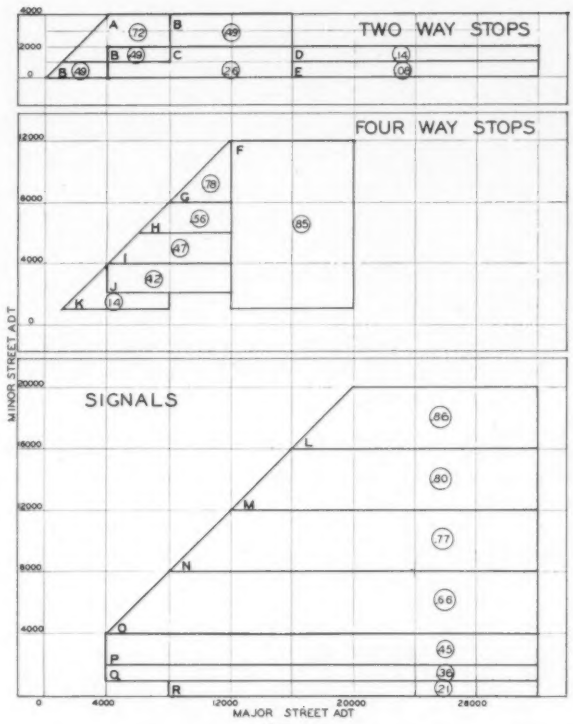


Fig. 1

Accidents per million vehicles vs. major and minor street volumes. Rates, in circles, are averages of those of the 20 to 50 intersections whose combination of volumes placed them within the heavy lines.

Discussion of Results

The following trends were observed in graphs shown in Figure 1:

(1) The accident rates for all three control types increased as the minor street volume increased.

(2) The accident rate for four-way stops increased markedly when the major street volume was greater than 12,000 ADT.

(3) The accident rate at two-way stops showed a reverse trend of *decreasing* rate with *increasing* major street volume.

While the first two trends conformed generally to previous experience, the third was such a marked departure from what would normally be expected that a separate check of additional samples was made. Average rates were calculated for those "problem" intersections which had been discarded earlier because of a suspected high rate bias. Although the "problem" intersection rates did indeed average two to three times higher than those shown in Figure 1, the same phenomenon of decreasing rate with increasing volume was evidenced.

Fig. 2
Right Angle Collision — Frequency at low volume two-way stops is usually reduced when intersection is made a four-way stop.

Further explanations of the variations of the total accident rates were found when they were broken down into their collision type components. The values of right angle, rear end and left turn rates that were calculated for each of the volume groups (as indicated by letter in Figure 1) are listed in Table A. Although most component rates followed the trend of the total rates, right angles accounted for most of the variation in two and four-way stops; left turns, together with right angles, accounted for most of the variation in signals.

TABLE A
Collision Type Component Rates
(In Accidents per Million Vehicles)

TWO-WAY STOPS:

Volume Group	Total	Right Angle	Rear End	Left Turn
A	.72	.60	.07	.05
B	.49	.41	.06	.02
C	.26	.17	.05	.04
D	.14	.09	.02	.03
E	.08	.02	.03	.03

FOUR-WAY STOPS:

Volume Group	Total	Right Angle	Rear End	Left Turn
F	.85	.44	.34	.07
G	.78	.52	.23	.03
H	.56	.35	.14	.07
I	.47	.32	.13	.02
J	.42	.23	.15	.04
K	.14	.06	.06	.02

SIGNALS:

Volume Group	Total	Right Angle	Rear End	Left Turn
L	.86	.29	.20	.37
M	.80	.34	.19	.27
N	.77	.31	.19	.27
O	.66	.30	.19	.17
P	.45	.27	.10	.08
Q	.36	.10	.21	.05
R	.21	.05	.12	.04

Testing the Results

After having determined these average rates empirically from 420 intersections, a number of tests were made to see how useful they would be in predicting accident frequency at other similar intersections. It was found that if the sample included a minimum of 20 to 30 locations, the total rate of all intersections could usually be predicted within 10%.

A typical prediction test is shown in Table B. It is composed of predictions of the future accident rate at 33 intersections which were to be signalized in 1953, together with those rates at which accidents actually occurred. For purposes of comparison, the former rates experienced as a two-way or four-way stop are also shown.

TABLE B
Comparison of Predicted and Actual Rates
at 33 Intersections Signalized in 1953
(In Accidents per Million Vehicles)

Intersections where Total Rates Increased as Predicted	Former Rate 2 or 4-Way Stop	Predicted Rate Signal	Actual Rate Signal
Bellflower Blvd. #1	.49	.66	.50
Bellflower Blvd. #3	.12	.45	.55
Bellflower Blvd. #4	.33	.80	.88
Paramount Blvd. #1	.38	.66	.51
Paramount Blvd. #3	.25	.36	.68
Lower Azusa Road #1	.00	.36	.14
Lower Azusa Road #2	.24	.77	.59
Lower Azusa Road #3	.27	.66	.42
Clark Avenue #3	.00	.77	.88
Normandie Ave. #1	.14	.36	.17
Del Amo Blvd. #1	.30	.77	.83
Rosecrans Ave. #2	.00	.77	1.00
Florence Ave. #1	.21	.45	.47
El Segundo Blvd. #1	1.40	.77	.45
	3.13	8.61	8.07
Intersections where Total Rates Decreased as Predicted			
Clark Ave. #1	.81	.45	.51
Clark Ave. #2	1.48	.45	.00
Clark Ave. #4	1.06	.77	.27
Sepulveda Blvd. #1	2.04	.66	.66
Avalon Blvd. #1	.81	.66	.00
Paramount Blvd. #2	.46	.45	.45
Paramount Blvd. #4	1.02	.86	.89
Crenshaw Blvd. #1	.63	.45	.10
Rosecrans Ave. #1	.56	.36	.11
Rosecrans Ave. #3	1.41	.77	.76
Rosecrans Ave. #4	1.05	.77	.97
Bellflower Blvd. #5	1.02	.45	.27
Beverly Blvd. #1	2.51	.66	1.12
Vermont Ave. #1	.80	.66	.58
Florence Ave. #2	1.23	.45	.69
Imperial #1	.96	.80	.84
	17.85	9.67	8.22
Intersections where Total Rates Failed to Change in Direction Predicted			
Avalon Blvd #2	1.38	.66	3.16
Bellflower Blvd. #2	.16	.45	.11
Melrose Ave. #1	.25	.45	.20
	1.79	1.56	3.47
GRAND TOTAL	22.77	19.84	19.76

Although the individual actual rates vary from the predicted, the grand totals for all 33 intersections are in extremely close agreement. From a practical standpoint it is even more important to note that, while future rates were not

estimated exactly, the prediction was sufficiently accurate in all but three cases (Avalon Boulevard #2, Bellflower Boulevard #2, and Melrose Avenue #1) to indicate whether or not signalization would result in an increase or decrease from the rate being experienced as a two or four-way stop.

At the same time that the total rates were predicated, estimates were made for the future rate of the three collision components. The comparative predicted and actual totals were as follows:

Total for 33 Intersections	Right Angle Rate Predicted	Right Angle Rate Actual	Rear End Rate Predicted	Rear End Rate Actual	Left Turn Rate Predicted	Left Turn Rate Actual
	8.95	7.05	5.46	5.25	5.43	7.46
No. of Intersections with component rate not increasing or decreasing as predicted	8		13		10	

It is evident that predictions for the component rates are not as accurate as predictions of the total rate. This is due, to a large degree, to the smaller number of accidents being used as a basis. Other studies have indicated that the addition of a second "after" year's experience will reduce by one-half the error between predicted and actual rates and cut the number of intersections which fail to increase or decrease as predicted to less than 15% of the total.

Rates Help Explain Usual Results of Control Change

Since the preceding tests seemed to indicate that intersections tend to conform to the average of the new control after a control change, the relationships between the averages of different controls were examined to see if there was any explanation for the fact that signals and stop signs sometimes increase and sometimes decrease accidents. Some reasons for this variability of effectiveness become immediately apparent. A good example is the following comparison of the average component rates for two and four-way stops when the average daily major and minor street volumes are 5000 and 3000, respectively:

	TWO-WAY STOP Accidents per Million Vehicles (Vol. Group A)	FOUR-WAY STOP Accidents per Million Vehicles (Vol. Group J)
Right Angle	.60	.23
Rear End	.07	.15
Left Turn	.05	.04
Total	.72	.42

This marked reduction of right angles has been noted in many before and after studies. Just as frequently, however, four-way stops have been found to increase accidents, largely through the increase in rear end collisions. A comparison of rates shows that would be expected to happen, on the average, when the average daily major street volume is above 12,000:

	TWO-WAY STOP Accidents per Million Vehicles (Vol. Group C)	FOUR-WAY STOP Accidents per Million Vehicles (Vol. Group F)
Right Angle	.17	.44
Rear End	.05	.34
Left Turn	.04	.07
Total	.26	.85

In the case of signalizing four-way stops, a similar comparison shows why conversion of a low volume intersection generally leads to an increase in accidents, while conversion of a high volume intersection usually results in the opposite trend:

LOW VOLUME INTERSECTION
Major Street ADT — 8000
Minor Street ADT — 7000

	FOUR-WAY STOP Accidents per Million Vehicles (Vol. Group H)	SIGNAL Accidents per Million Vehicles (Vol. Group O)
Right Angle	.35	.30
Rear End	.14	.19
Left Turn	.07	.17
Total	.56	.66

HIGH VOLUME INTERSECTION
Major Street ADT — 15000
Minor Street ADT — 7000

	FOUR-WAY STOP Accidents per Million Vehicles (Vol. Group F)	SIGNAL Accidents per Million Vehicles (Vol. Group O)
Right Angle	.44	.30
Rear End	.34	.19
Left Turn	.07	.17
Total	.85	.66

In both cases, signalization increases the left turn accident rate. Below 12,000 ADT on the major street this increase in frequency of left turn collisions cancels out the reduction of right angle collisions. Above that volume the reduced rate of right angles *and* rear end collisions results in a net advantage for signalization.

It is also possible to show by similar comparison why signalization of the intersection of a large volume through street with a small volume side street, as frequently occurs in a progression, will, on the average, double the accident rate, mainly through the increase of rear end collisions.

From these examples it might appear easy to establish volume warrants for shifting from two way to four way stops or signals by merely determining for the controls the major and minor street average daily volumes of traffic at which the differences in average rates makes conversion advantageous. It cannot be too strongly emphasized that this should not be done, for what may be advantageous on the average might not be so in an individual instance. As an example, take the case of a four way stop with an average major street volume less than 12,000—the range in which, on the average, the rate *increases* from .56 to .66 after signalization. If its four way stop rate was .80, an actual *reduction,* approaching the signal average rate of .66 would occur upon conversion. On the other hand, a four way stop with an average major street volume above 12,000 might very well experience an increase in accidents if its accident rate as a four way stop were below that of the expected signal average. The intersections signalized by the Los Angeles County Road Department in 1953 contained such instances, where rates increased or decreased opposite to the average expectancy because of abnormally low or high presignalization accident experience.

In essence, then, it appears that when contemplating a control change for purposes of accident reduction, intersections cannot be judged on the basis of volume warrants, but

Fig. 3
Rear End Collision — Frequency on high volume streets increases when traffic is required to stop.

rather whether or not the present frequency at which accidents are occurring would be likely to be reduced. This does not imply that volume warrants do not have usefulness, for they are invaluable in many instances such as setting up the priority for signalization of those intersections where high volumes make such controls mandatory. Nor actually should the mere reduction of the total number of accidents be the sole warrant.

The Question of Severity

At this point the question arises as to whether it is the reduction of the total *number* or the *severity* of accidents which is the motivation for changing controls. Table C, which shows the breakdown of total rates into severity components, reveals that in most instances the actual proportion of the total rate which is major-fatal, minor, or property damage, is about the same. Thus the statement could be made that *on the average,* a reduction of total accident rate will lead to a reduction of the severity of accidents.

TABLE C
Severity Component Rates
(Accidents per Million Vehicles)

Volume Group	Total	Major—Fatal	Minor—Injury	Property Damage
TWO-WAY STOPS:				
A	.72	.05	.29	.38
B	.49	.03	.15	.31
C	.26	—	.11	.15
D	.14	.01	.03	.10
E	.08	.01	.03	.04
FOUR-WAY STOPS:				
F	.85	.09	.28	.48
G	.78	.02	.21	.55
H	.56	.01	.09	.46
I	.47	.02	.15	.30
J	.42	.02	.10	.30
K	.14	.01	.05	.08
SIGNALS:				
L	.86	.06	.26	.54
M	.80	.04	.25	.51
N	.77	.04	.25	.48
O	.66	.05	.21	.40
P	.45	.03	.14	.28
Q	.36	.02	.09	.25
R	.21	—	.08	.13

The same precaution would have to be taken as before in applying what is true for the average to individual cases. It is quite possible that an intersection with a consistently low minor injury record could experience an increase in severity upon control change even though the difference between the average minor injury rates for the two controls at that volume might indicate otherwise. There is even a greater need for caution when dealing with major-fatal accidents. As this type occurs rarely, it is quite conceivable that the incidence of one or two such accidents would not be repeated for a considerable period, regardless of whether or not a more restrictive control were applied.

A careful study based on an adequate sample of intersections with sufficient exposure time before and after will be needed to ascertain the true effect of four way stops and signals on the more serious accidents. The need for such a study was highlighted when, in search of further data on severity, the pedestrian accident rate was calculated for 434 intersections. Three facts were ascertained:

(1) Unlike vehicle accident rates, pedestrian accident rates appear relatively constant for all values of minor or major street volumes.
(2) Pedestrian accident rates increased significantly with increasing pedestrian volume.
(3) Unlike vehicle accident rates, pedestrian accident rates were not significantly different for two way stops, four way stops or signals in both number and *severity.*

The rates as shown in Table D represent pedestrian crossing accidents (up to 300 feet from the intersection) per million vehicles. The pedestrian crossing volumes are the hourly average across all four legs as tabulated in six-hour afternoon hand counts.

TABLE D
Pedestrian Accident Rates
(in Accidents per Million Vehicles)

Pedestrians Hourly Intersectional Volume	Total	Major—Fatal	Minor—Injury
0- 10	.011	.004	.007
10- 30	.022	.005	.017
30- 50	.036	.003	.033
50-100	.068	.014	.054
100-500	.169	.034	.135

Comparison of the above major-fatal *pedestrian* rates with the major-fatal *vehicle* rates of Table C shows that the pedestrian rates are, on the whole, much smaller. In the event additional control is established it is likely that any change of pedestrian major-fatal accidents will be overshadowed by the change of equally severe, but often unassociated, vehicle accidents.

Discussion of Accuracy

It should be emphasized that all of the foregoing analyses are based on studies of accidents at intersections in the unincorporated area of Los Angeles County, and it should not be implied that the relationships indicated are universal. Also, because of large variances of the samples of many volume groups, it is not possible to show significance of difference between all averages of adjacent volume groups in the same control, or between all corresponding volume groups of different controls. The graphical presentation of Figure 1 itself gives a good idea of the reliability of the rates, for although

the trends are continuous, the occasional large jump in values indicates the need for caution in their use.

There is every evidence, however, that larger sampling experience both in size and exposure time would not only make demonstrations of statistical significance possible, but would enable a much smoother portrayal of the surface representing the relation of accident rates with minor and major street volume.

The claim that empirically derived rates are a valid representation of the phenomena of accident frequency at such intersections is based on two findings: The first is that increases or decreases in accident rate following control change can be consistently predicted; the second is that there is a marked correlation between changes which the rates indicate will occur on the average and those which many observations and studies have previously found.

No attempt has been made to include the effect of such variables, as illumination, speed, roadside development, etc., because studies that have been made on the possible effects of such factors indicate that they play a minor role, if any, in determining rates. Note that in the case of the signals installed in 1953, the predictions of the total rate at 33 intersecions, which was accurate within 1%, was based on volume alone. In addition, actual field checks failed to indicate that those intersections having rates above normal differed markedly in respect to illumination, speed, or roadside development from those having below normal rates.

Conclusions

(1) Determination of empirical rates of vehicle accidents at intersections shows them to be influenced in varying degrees by major and minor street volume and control type.

(2) Use of such rates enables predictions with *considerable* accuracy regarding:
   (a) Direction of individual rate change.
   (b) Total amount of change at a sufficient sample of intersections.

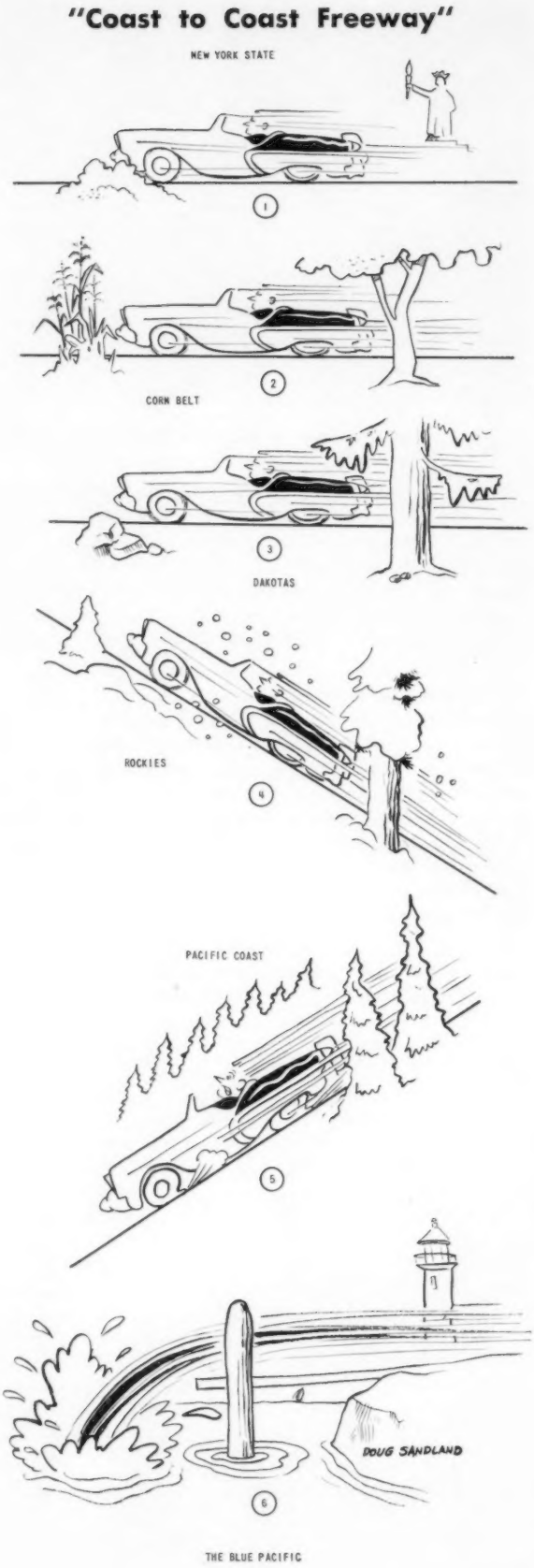
(3) Use of such rates enables predictions with *lesser* accuracy of:
   (a) Total change at individual intersections.
   (b) Changes in collision type component rates at individual intersections.

(4) Use of such rates helps in understanding average effects of control change.

(5) Additional study will be necessary to enable predictions in regard to changes in severity component rates of both vehicle and pedestrian accidents following control change.

The study is by no means completed. At the present time the scope of the inquiry is being extended to consider such geometric modification as "T" intersections and channelization. Rates for the "hit fixed object" and "passing-turning" types of accidents are to be determined. The effect of such measures as advance warning and crosswalk markings will also be investigated.

The Los Angeles County Road Department welcomes correspondence on the subject of this study and will be most willing to furnish additional details regarding definitions and techniques used. It is hoped that other agencies will corroborate the findings detailed here and extend the understanding of the phenomena of accident rates at intersections.



Virginia Sign Truss

By Robert W. Wallace (Jr. Mem., ITE)
Traffic Engineer, Virginia Department of Highways, Suffolk, Virginia

Fig. 1
Little Creek — South of Portsmouth — London Bridge
Some typical sign trusses in Virginia, showing various kinds of signs and locations.

MANY YEARS AGO the Virginia Department of Highways began to experience difficulty in displaying guide signs to the best advantage. Advertising signs and business establishments adjacent to the right of way frequently gave ordinary guide signs more competition than they could overcome. Some locations were so blanketed by such attention diverting signs and lights that a large percentage of foreign motorists either missed them completely or were too far into the intersection to make a safe turn by the time they realized where they were.

One fairly obvious solution was the use of oversized signs and markers and in many places size and distinctive shapes and colors successfully met the competition. However, in other places size alone was insufficient and right of way restrictions or sight distance problems prevented the effective use of roadside structures. Pavement marking was also tried but with only moderate success. The markings were soon eradicated by heavy traffic and were frequently concealed by other vehicles. This left only one possible location for the signs, i.e. over the road where visibility is practically unrestricted and advertising is prohibited.

The first overhead signs were four by six or four by eight foot panels of three-quarter inch plywood with messages stenciled in black on white reflectorized sheeting. These signs were suspended over the road by means of two nine-sixteenths inch cables stretched between guyed wood poles or steel poles. They had several faults, the worst of which were the difficulty of keeping the signs level because of sag in the cable and the constant slight movement in a wind which produced a chafing action that eventually weakened the cables to the danger point. However, they did prove the effectiveness of overhead signs and in the next few years a good many of these signs were installed.

To overcome the faults of the cable suspended signs the Bridge Division, in 1951, was requested to design a sign truss. The structure was to hold the maximum weight of several large signs without sagging and to withstand one hundred mile winds while carrying the maximum sign area. A secondary consideration but still an important one was appearance. The Department wanted a truss with some "eye appeal" rather than an ugly, cumbersome sign rack. The aero type construction, some examples of which are included in Figure 1, was selected because of its high strength, light weight, low wind resistance, and pleasing form as the one most likely to meet all requirements. The distinctive construction is intended to warn the driver of an important intersection or an unusual or dangerous situation long before he can read the sign. The message on the panel then tells him what lies ahead.

Figure 2 shows an overhead member, triangular in section with rounded corners that join tapering side members. The three chords are of extra strong one-inch pipe spaced to form an inverted triangle with a base and altitude of four feet. At the ends the two top chords curve on a four-foot, six-inch radius to the side members. The lower pipe curves on a six-inch radius and inclines outward until it joins the foundation between, and in line with, the top chords.

The web members are of extra strong three-quarter inch steel pipe bent to shape and joined to the chords by means of three-eighths inch fillet welds. Details of the web on the overhead and side members are given in Figures 3 and 4. Web joints are staggered so that no two joints fall at the same place on the chord. Maximum spacing of the joints is four feet.

Pipe ends are joined by forcing six inches of tight fitting steel rod into the ends of the pipes and securing it with a

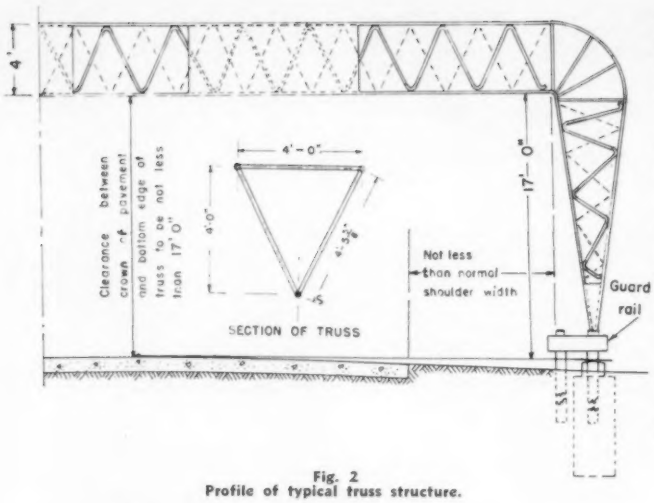
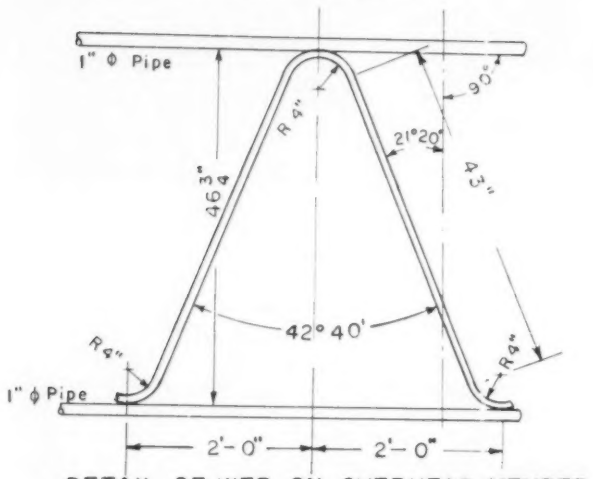
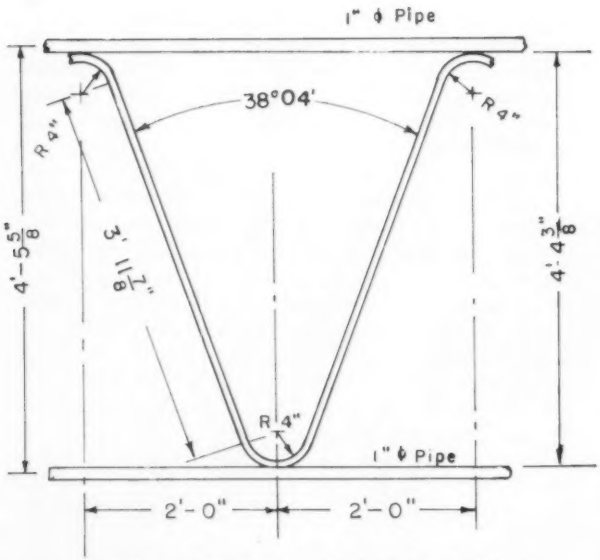

4'
Clearance between crown of pavement and bottom edge of truss to be not less than 17' 0"
4'-0"
4'-0"
SECTION OF TRUSS
Not less than normal shoulder width
17'-0"
Guard rail

Fig. 2
Profile of typical truss structure.



DETAIL OF WEB ON OVERHEAD MEMBER

Fig. 3



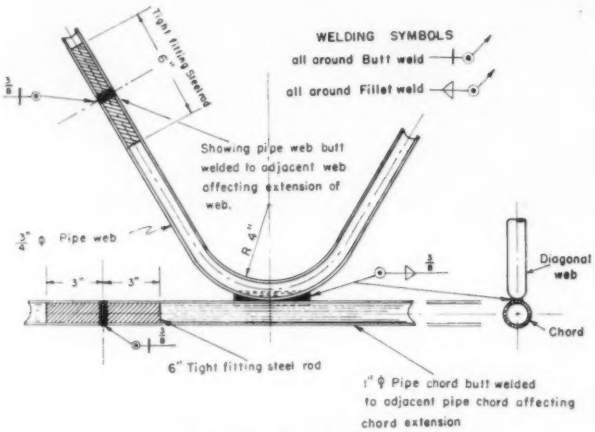
DETAIL OF WEB ON SIDE MEMBER

Fig. 4

three-eighths inch butt weld, as illustrated in Figure 5. The original plans called for a pipe union connection to the pipe supports at the foundation but it was found to be too weak, and a filler rod and butt weld joint has been substituted.

The concrete footing is shown in Figure 6, eight feet long, two feet, six inches wide, and six feet deep with its length parallel to the road. The foundation is six feet, six inches long, eighteen inches wide and three feet high and is centered on the footing. The three pipe supports reach five feet into the footing and extend six inches above the foundation. The foundation is set at the outside edge of the shoulder and is protected by a metal ribbon guard.

The design shows a maximum span of sixty-five feet between uprights and a minimum height of seventeen feet. Two sixty-seven foot spans are in use in Virginia and it is probable that spans even longer than sixty-seven feet would be safe.


WELDING SYMBOLS
all around Butt weld
all around Fillet weld
Tight fitting Steel rod 6"
Showing pipe web butt welded to adjacent web affecting extension of web.
3/4" ϕ Pipe web
R 4"
3"
3"
3/8
Diagonal web
Chord
6" Tight fitting steel rod
1" ϕ Pipe chord butt welded to adjacent pipe chord affecting chord extension

DETAIL OF WELD AT PIPE JOINTS AND CHORD – DIAGONAL JUNCTURE.

FOR JOINTS, THE TWO PIPE ENDS MUST BE WELDED TO FILLER ROD WITH AT LEAST 3/8" LENGTH GROOVE WELD.

Fig. 5

All but eight of the twenty-six trusses in Virginia are in the Suffolk Construction District. Mr. S. S. DeLucia, Landscape Superintendent of Suffolk District, who erected the original trusses at Virginia Beach, has the trusses completed, except for the field welds, in the District Shop. The web members are bent to shape over mold forms. A jig of plywood and lumber holds the chords in the correct position while the web members are welded in. A light mobile crane is used to hold the overhead part in place while the field welds are made. After erection an eleven gauge sheet steel apron two feet, six inches wide is welded around the vertical pipe legs fifteen inches above the foundation joints (Figure 7). Barbed wire is wrapped around the three legs and around the web members from seven feet above the ground to the bottom chord of the girder to discourage climbing.

Figure 8 illustrates details of the sign brackets, made of one-half inch by two inch strap iron. Each bracket hooks over the top chord and fastens to the bottom chord by means of a one-half inch U-bolt. The top part of the bracket exclusive of the hook is three feet, eleven and five-eighths inches. The bottom part is one foot, seven and one-quarter inches. This inclines the sign at an angle of six degrees and forty-five seconds from the vertical and places it at about

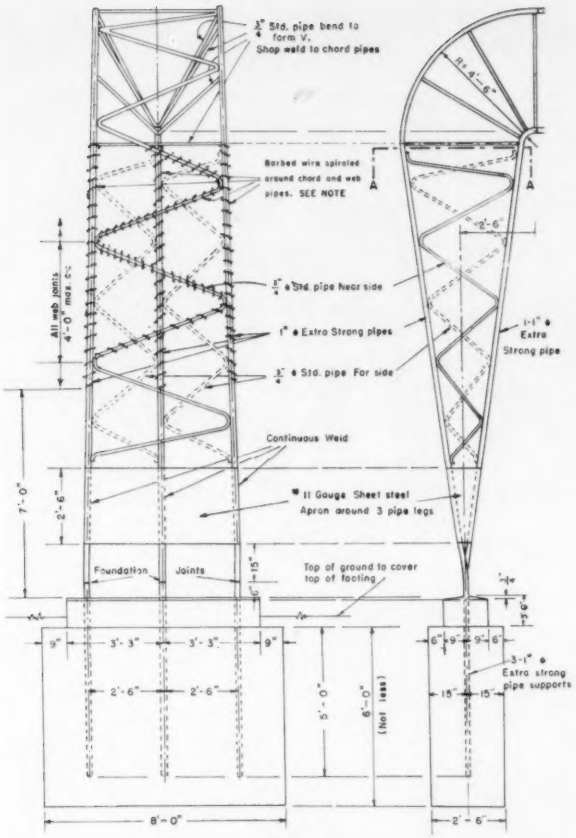


Fig. 6
Side and front elevations of vertical truss members, the foundation and the footing.

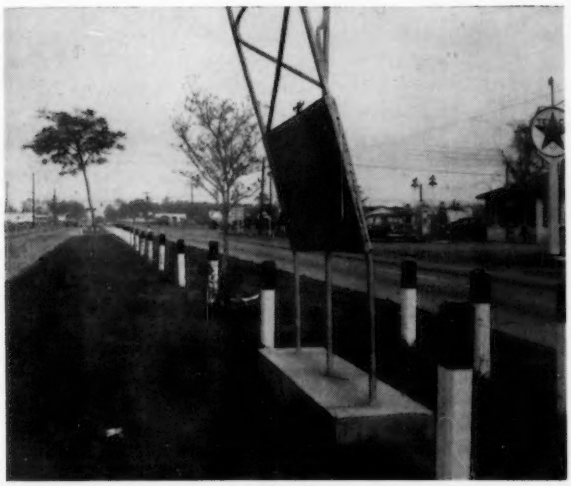
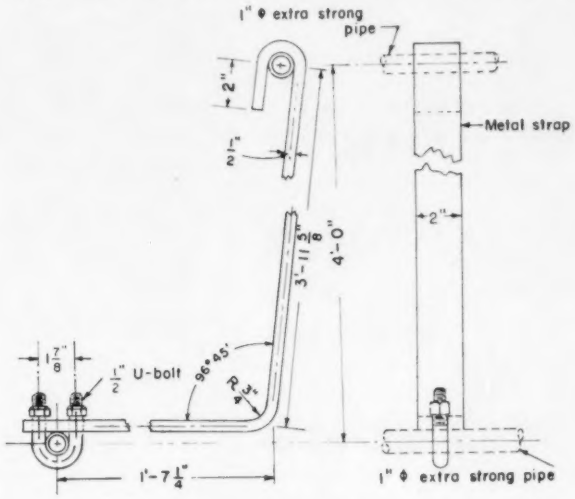


Fig. 7
Close-up of sheet metal apron welded around the vertical pipe legs.

a ninety degree angle to the driver's eye at the average reading distance. Figure 9 shows a typical sign installation.

Most signs that are in use on these trusses have either a reflectorized background or reflectorized lettering. It has been found, however, that at a height of seventeen to twenty-two feet above the road reflectorization alone is not sufficient to bring out the message clearly. This is probably due to the fact that on the heavily traveled highways where the trusses are used practically everyone keeps his headlights on a low beam thereby reducing the illumination to a point below that required by the reflectorizing material. Consequently all signs have been lighted to increase legibility. Most are lighted by "gooseneck" fittings welded to the top chord of the girder. A few are illuminated by two Steber units at-



SIGN BRACKET
Fig. 8

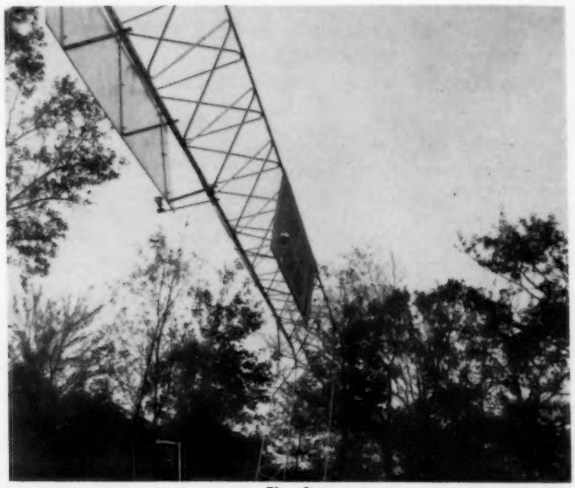


Fig. 9
View from below a typical truss, showing sign installation details, Steber illuminating units, and detail of the overhead member.

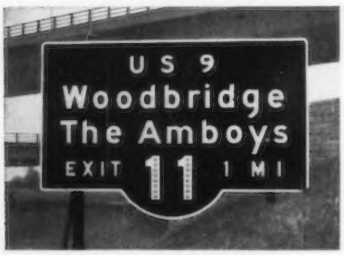
tached to the bottom corners of each sign. Recently, several Steber units were set out on pieces of pipe welded to the bottom chord and extending out below the lower corners of the signs. Two of these units can be seen in Figure 9. Units so placed illuminate the sign without shadow and without reflecting light toward the motorist. A recent experiment is the use of lights on non-reflectorized signs. White letters on a black background were used in this installation. Steber units, set out three feet from the bottom chord are used to illuminate these signs also. The success of this installation seems to indicate illuminated rather than reflectorized signs for future use.

The overwhelming superiority of the truss over other types of installation is readily apparent. In Virginia at least, the truss has a bright future.

THERE ARE GOOD REASONS WHY

New York Thruway

Pennsylvania Turnpike



New Jersey Turnpike

. . . three major superhighway systems standardize on Stimsonite

The New York Thruway, Pennsylvania Turnpike and New Jersey Turnpike are all using Stimsonite as the reflective material for signs and markers because:

1. Stimsonite offers better *visibility* than any other material.
2. *Readability* of Stimsonite signs is superior at greater distances.
3. There is nothing to wear, chip or fade; Stimsonite has unequalled *durability*.

Be sure you're making the best long-term signing investment. Call your Stimsonite man or write us.

STIMSONITE® *for* ***Seeability Readability Durability***

AGA DIVISION

ELASTIC STOP NUT CORPORATION OF AMERICA

1027 NEWARK AVENUE, ELIZABETH 3, NEW JERSEY

TRAFFIC NEWS

Traffic Institute Announces Course For USAF

A three-week course in motor vehicle traffic control will be conducted next July for the United States Air Force by the Traffic Institute of Northwestern University, Evanston, Ill.

Purpose of the training is to broaden the knowledge of officers and civilian supervisory personnel in the engineering, education, and enforcement fields of vehicle accident prevention and traffic control; indoctrinate them in modern traffic control techniques; and provide them with the technical background necessary for sound traffic programs on Air Force installations.

The 100-hour course is scheduled July 11-29. Subject matter will be divided into the following sections: vehicle accident investigation, Air Force traffic accident and violation reporting, traffic accident prevention, the operator, the pedestrian, the vehicle, the highway, civilian and military traffic rules and laws, supervision of highway, vehicle use and users, and traffic safety education.

The training is designed for officers and civilian supervisory personnel in Ground Safety, Installations, Transportation, and Provost Marshal.

Compendium of Registration Laws Published for Engineers

Publication is announced of "Professional Engineering Registration Laws," a compendium of registration laws for professional engineers in the 48 states, Alaska, Hawaii, Puerto Rico, and the District of Columbia.

The 614-Page book has been compiled by Alfred L. McCawley, attorney and former Missouri State Senator.

The compendium is the culmination of an extensive research project undertaken by Mr. McCawley under the sponsorship of the National Society of Professional Engineers.

Published at $8.75, the book presents, state by state, the exact legal requirements that must be met for professional practice. It is a reference volume designed for the professional engineer or the engineer-in-training who plans to practice on a permanent or part time basis in another state or territory.

The compendium covers in detail such elements of the state laws as temporary permits, fees and bonds, the filing of maps, certificate applications, education requirements, examinations, and public works projects.

The laws are cited for reciprocity, registration renewals, corporate and partnership practice, revocation of registration, and violations and penalties.

Mr. McCawley, who was admitted to the Missouri Bar in 1900, served in both the Missouri State Senate and the House of Representatives. He has been active in securing the passage of laws involving registration of architects and engineers, and is the author of many published articles on this subject. He has been counsel for the Missouri State Board of Registration for Architects and Engineers since 1941.

The book may be ordered from the Trustee Publication Fund, Jeffersen City, Missouri.

Contracts Two Microwave Systems

Camden, N. J.—Reflecting the increasing use of radio communications as a tool for speedier, more efficient maintenance of the nation's roads, the Engineering Products Division, Radio Corporation of America, today announced contracts calling for construction of two separate microwave relay systems for the Department of Highways of the State of Washington.

One system will provide a VHF control circuit inter-linking Port Angeles, Bellingham, and the Highway Department's Orcus Island VHF base station located atop Mount Constitution, according to Russell C. Dubois, RCA communications Equipment Sales Manager. The second system will provide point-to-point communication between Walla Walla and Pasco.

Both systems will utilize standard RCA CW-5B microwave radio relay equipment.

Schuster is Alcoa Sign Supervisor

For the first time in their history, Aluminum Company of America distributors are offering a complete line of aluminum sign materials.

In conjunction with this new service for customers, Alcoa has announced the appointment of Melvin R. Schuster as Market Supervisor for the sign industry, a new position with the company.

Mr. Schuster has served in production, sales, and construction engineering capacities for the company. He was last assigned to the Commercial Research Division as a Market Analyst.

A native of Denver, Colo., Mr. Schuster was graduated from the University of Colorado in 1941 with a degree in Mechanical Engineering.

Alcoa distributors now have full-range stocks of aluminum blanks, sheet, and fasteners for long-lasting signs for traffic instruction and regulation, railroads, commercial advertisers, and industrial plants.

Under the new plan, over 50 Alcoa distributors throughout the country can now offer quick service on sign blanks of various shapes and sizes, complete with aluminum fasteners for proper construction.

Made of an aluminum alloy which is stronger than other materials used for signs, Alcoa's signs offer strength, light weight, resistance against damage by vandalism and resultant discoloration, preservation of the sign's message, and high reclamation value.

Even though the message film is broken or perforated, aluminum signs will not produce discoloring streaks that reduce effectiveness and, in cases where vandalism is not a problem, the message lasts longer on aluminum which resists attacks from weather and industrial fumes in the atmosphere.

Alcoa does not sell completed signs, but does offer high quality sign materials. An important part of these materials is aluminum fasteners. These fasteners add to the life of signs by preventing corrosion and discoloration at points where they are used in the construction of the signs.

Second IRF World Meeting to Be in Rome

Foremost authorities on highways from all parts of the world will gather to exchange ideas and discuss problems at the Second World Meeting of International Road Federation to take place October 2-8, 1955, in Rome.

Representatives from more than 60 countries are expected to attend. Cooperation of government and private interests in the maximum extension and improvement of national and international highway systems will be the keynote of the meeting.

Papers by highway experts around the world will be submitted in a score or more languages on various aspects of three principal subjects : (1) financing, (2) technical training, and (3) social and economic influences.

General J. A. Anderson, commissioner, Virginia Highway Department, will lead the discussion and evaluate papers submitted on technical training for highway engineers, traffic engineers, and operators and mechanics of road-building equipment and motor vehicles.

Professor Papi, rector of Rome University, will preside over the highway financing program, and F. A. C. Guepin, managing director of Shell Petroleum Company, London, will be in charge of the program on social and economic aspects of road development and highway transportation.

Delegates will be received by His Holiness The Pope in an audience on the morning of October 2, opening day of the meeting. The first general assembly will be held that afternoon. The program on highway financing will take place October 3; technical training on October 4, and social and economic aspects of road development and road transportation on October 5.

The International Road Federation and national good roads delegates will discuss organizational business October 6. The last two days of the world meeting will be utilized for a tour of Italian highways.

All meetings will be conducted in Spanish, English, French and Italian, with simultaneous translations. Headquarters will be in the Food and Agricultural Organization buildings.

The First World Meeting of International Road Federation was held in 1952 at Washington, D. C.

Highway Finance Conference Report Is Published

All of the facts and expert opinion on federal, state and local highway problems brought out at the recent two-day National Conference on Highway Financing sponsored by the Chamber of Commerce of the United States, are summarized in a new Chamber publication, "Better Roads for Our Growing Nation."

The booklet also includes 25 pages of up-to-the-minute data on street and highway construction, taxes, motor vehicle totals, highway expenditures and toll roads.

Speeches and discussions summarized in the booklet gave special attention to the President's $101 billion highway proposals, the relation of the toll road boom to national highway problems, and the question of how to finance street and highway construction.

Especially valuable are the discussions of highway problems between speakers and engineers, financiers, government officials and business men who attended.

Yale ITE Chapter Elects New Officers

Louis E. Keefer was elected President of the Yale Student Chapter of the Institute of Traffic Engineers at a recent meeting. Other officers elected for the second semester include John M. Bayley, Vice-President; James R. Doughty, Secretary; and Milton H. Heywood, Treasurer.

Before taking graduate training at the Yale Bureau of Highway Traffic, Keefer was associated with the West Virginia Highway Department; Doughty was Traffic Engineer of Hamilton, Ohio, and Heywood was with the Michigan State Highway Department, Traffic Division. Mr. Bayley hails from Melbourne, Australia, and is with the University of Melbourne.

Recent activity of the Student Chapter has included raising funds for a memorial to the late Theodore M. Matson, former director of the Bureau.

Membership Applications

The following applications have been received since the list of applicants published last month.

APPLICATIONS FOR TRANSFER

BATTS, Herman M., Jr.
Traffic Engineer
City of Detroit, Municipal Parking Authority
9th Floor, Griswold Building
Detroit 26, Michigan
March 24, 1955 for MEMBER grade

CLEVELAND, Donald Edward
Traffic Engineer
Ramp Buildings Corporation
230 Park Avenue
New York 17, New York
April 11, 1955 for ASSOCIATE grade

HIGGINS, Herbert C.
Office Engineer
Washington State Highway Commission
Transportation Building
Olympia, Washington
March 28, 1955 for MEMBER grade

HUNNICUTT, James Madison, Jr.
Traffic Engineer
Bureau of Street Traffic—City of Chicago
Room 709, City Hall
Chicago, Illinois
March 28, 1955 for ASSOCIATE grade

JENKINS, Arthur Clyde
Consulting Engineer (Transportation & Traffic) U. S. Government, Cities, States, Districts, Transit Companies, Civic Groups & Citizens
1095 Market Street
San Francisco, California
March 24, 1955 for MEMBER grade

LENTELL, Lynwood Wilmarth
Assistant Highway Engineer
California Division of Highways
Fresno, California
April 18, 1955 for ASSOCIATE grade

NEW APPLICATIONS

BRANDT, Warren H.
Field Engineer—Bureau of Traffic
Illinois Division of Highways
164 DuPage Street
Elgin, Illinois
April 7, 1955 for JUNIOR grade

BROWN, Philip Sidney, Jr.
Assistant Highway Engineer
Washington State Department of Highways
Planning Division
Transportation Building
Olympia, Washington
April 4, 1955 for JUNIOR grade

FIELDS, Kenneth Gordon
Assistant District Engineer of Traffic
Indiana State Highway Department
Indianapolis, Indiana
April 18, 1955 for ASSOCIATE grade

GEORGE, Stephen, Jr.
Junior Civil Eigineer (Design)
California Division of Highways, Dist. VIII
P. O. Box 231
San Bernardino, California
March 25, 1955 for ASSOCIATE grade

GREGORY, Randolph T.
Assistant Traffic Engineer
City of Forth Worth
Traffic Engineering Department
950 Jennings, Fort Worth, Texas
April 11, 1955 for JUNIOR grade

GRIMM, Robert Cook
Senior Engineer
City Engineering Department
City Hall
East Orange, New Jersey
April 20, 1955 for ASSOCIATE grade

HAHN, Arthur R.
New England District Manager
Union Metal Manufacturing Company
Canton, Ohio
April 11, 1955 for ASSOCIATE grade

HARTIGAN, Michael Joseph Patrick
Traffic Engineer II
Bureau of Street Traffic, Room 709
City Hall
Chicago, Illinois
April 18, 1955 for JUNIOR grade

HOFFMAN, Robert Neilson
Director, Traffic Engineering and Accident Prevention
Automobile Club of Philadelphia
23 South 23rd Street
Philadelphia 3, Pennsylvania
April 13, 1955 for ASSOCIATE grade

NEWMAN, Denis G.
Assistant Engineer
City of Vancouver
Engineer's Department, City Hall
Vancouver 10, British Columbia
March 21, 1955 for ASSOCIATE grade

QUINBY, Henry Dean III
Principal Traffic Engineer
Parsons, Brinckerhoff, Hall and MacDonald
51 Broadway
New York 6, New York
April 13, 1955 for JUNIOR grade

REYMAN, George Lewis
Assistant District Traffic Engineer
Indiana State Highway Department
Box 178
Seymour, Indiana
April 18, 1955 for ASSOCIATE grade

RODRIGUEZ, Jorge F.
Civil Engineer
Traffic Bureau, Public Works Department
Stop 22½
Santurce, Puerto Rico
April 4, 1955 for JUNIOR grade

SWANSON, David Paul
District Traffic Engineer
State Department of Highways
Box 52
Yakima, Washington
March 25, 1955 for ASSOCIATE grade

WALLACE, James M.
Senior Civil Engineer
New York State Traffic Commission
Albany, New York
April 11, 1955 for MEMBER grade

New Appointments . . .

Hanna Appointed Assistant Safety Director

John Tyler Hanna (Mem., ITE), 32-year-old city traffic engineer of Richmond, Virginia, was recently appointed assistant director of public safety for that city. Hanna has been acting assistant safety director since last July. He placed first on a competitive examination given last summer for the post.

In announcing the appointment, Safety Director W. L. Groth declared, "We are very fortunate to have a man of Mr. Hanna's caliber and experience available from within the department."

John T. Hanna

Hanna, who has headed the Richmond traffic engineering agency since July, 1948, is the son of Police Traffic Superintendent and Mrs. John G. Hanna of the same city. A graduate of Thomas Jefferson High School in Richmond, Mr. Hanna holds a B.S. in E.E. from Virginia Polytechnic Institute, and L.L.B. from Smithdeal-Massey night school, and a Certificate from the Yale Bureau of Highway Traffic. He has also completed specialized courses in police and municipal administration, criminal psychology, and civil defense.

During World War II, Hanna served as an electronic technician in the Navy, having received training at Wright Junior College in Chicago, University of Houston in Texas, and the Naval Research Laboratory in Washington, D. C.

Mr. Hanna is vice-president of the Richmond Area Safety Council, treasurer of the Richmond Municipal Credit

(Continued on page 324)

Maslog Appointed Head New Philippine Bureau Of Public Highways

Mr. Rodolfo Maslog (Mem., ITE), formerly chief programming and planning engineer for the Philippine Bureau of Public Works, was recently appointed Commissioner of the newly created Bureau of Public Highways of the Department of Public Works, Republic of the Philippines.

Rodolfo Maslog

Born in 1901 in Tagbilaran, Bohol, Philippines, Mr. Maslog was valedictorian of his graduation class at Bohol High School. In 1921 he was selected through competitive examination as pensionado to the College of Engineering of the University of the Philippines by the province of Bohol. After graduating with the degree of B.S. in C.E. in 1925, he entered the Bureau of Public Roads as assistant engineer.

From 1926 to 1932, Maslog was assigned to special duty for location and surveying main roads and bridges in Southern Luzon, Mindanao, Palawan and Zambales-Tarlac. For the next five years he was engineer in charge of maintenance of national and provincial roads in Tarlac and Rizal. In 1938, Mr. Maslog became district engineer for Ilocos Norte, Bataan, Antique and Zamboango and served in that capacity for ten years.

After being appointed planning and traffic engineer for the Bureau of Public Works in 1948, Maslog spent a year in the United States under the Rehabili-

(Continued on page 324)

Kreml Heads New Transportation Center

Franklin M. Kreml, director of the Northwestern University Traffic Institute and the Traffic Division of the International Association of Chiefs of Police, has been appointed director of the University's new Transportation Center. Mr. Kreml's appointment, effective March 15, is for one year. Ray Ashworth, executive assistant to the director of the Traffic Institute, will be acting director during Mr. Kreml's absence.

Franklin M. Kreml

"We are fortunate in having a man of Mr. Kreml's caliber to take this post," said Dr. J. Roscoe Miller, University President. "His task will be to direct development of plans and programs for the Transportation Center and to present and interpret these plans to interested business and industrial leaders." The Transportation Center will carry on a program of research, undergraduate training, and graduate study aimed at solving major problems in the highway, rail, air, pipeline and water divisions of the nation's transportation industry.

A native of Chicago, Mr. Kreml attended the University of Wisconsin, Northwestern University and the John Marshall Law School, receiving his LL.B. degree from the latter institution.

He was a police officer with the Evanston Police Department while attending Northwestern University and worked his way through the ranks to lieutenant commanding traffic and di-

(Continued on page 324)

Ashworth To NUTI

Ray Ashworth, formerly superintendent of security of the Port of New York Authority, has been named executive assistant to the director of the Traffic Institute, Northwestern University, and of the Traffic Division of the International Association of Chiefs of Police.

Ray Ashworth

Shortly after Mr. Ashworth assumed his new duties, it was announced that Mr. Franklin M. Kreml, director of both organizations, had been appointed director of Northwestern University's new Transportation Center for one year. Mr. Ashworth will serve as acting director of the Traffic Institute and IACP Traffic Division.

Born in Anthony, Kansas, in January, 1905, Mr. Ashworth lived in Wichita from 1908 to 1936. He was graduated from Wichita High School and attended Friends University for three years.

He was appointed a patrolman in the Wichita Police Department in 1928 and during the next eight years served as detective, lieutenant of traffic, and captain of the uniformed division. He was acting chief in 1936 when he obtained a leave of absence to become a field representative and one of the original staff members of the Traffic Institute and IACP Traffic (then Safety) Division.

Mr. Ashworth returned briefly to the Wichita department in November of 1936, but came back to the Institute and IACP Traffic Division as associate director in April, 1937.

In July, 1939, San Antonio, Tex., appointed him chief of police, and he served in that capacity until he was named chief of police of Houston in February, 1941. He was commissioned a major in the Army of the United States in April, 1942, and served in the African, European and Pacific Theaters until his release in April, 1946, with the rank of lieutenant colonel. His military decorations include the Bronze Star and the Legion of Merit.

In June of 1946, Mr. Ashworth was appointed chief of the Inspection and Investigation Division of the Veterans Administration regional office in Dallas. In June, 1947, he became chief of the Public Safety Branch, U. S. Office of Military Government, in Berlin, and held this position until he returned to the United States in the spring of 1950.

In September, 1950, Mr. Ashworth was appointed director of civil defense for the City of Wichita and County of Sedgewick (Kansas), and served until May, 1951, when he was named head of the 1,000-member police agency of the Port of New York Authority.

At various times Mr. Ashworth has been engaged by Public Administration Service to conduct police surveys and reorganizations. He did this type of work in Greenwich, Conn., in 1937; in San Diego, Cal., in 1946, and in Alameda, Calif., in 1950.

Mr. Ashworth is married and has two daughters, Judith Ann, 20, and Patricia Jean, 19.

RODOLFO MASLOG

(Continued from page 323)

tation Program supervised by the U. S. Bureau of Public Roads. He then spent three months in Europe, representing the Philippines at the United Nations Conference on Highway Transport at Geneva. His signature, on behalf of his Country, was placed on the "Convention of Motor Traffic" approved at the Conference.

Shortly after returning to the Philippines, Maslog became chief programming and planning engineer, Division of Highways, Bureau of Public Works. In October, 1954, he was appointed Acting Commissioner of the newly created Bureau of Public Highways.

In this new capacity Commissioner Maslog is responsible for:

1. administration of the Philippine Highway Act of 1953, providing for effective highway administration, apportionment of highway funds and aid to the provinces and chartered cities in the construction of roads and streets;
2. preparation of long-range programs of highway development, improvement and construction;
3. formulation of uniform practices for the physical design of highway facilities;
4. direction of research in planning, location, design, construction and maintenance, including testing of materials and proper use of equipment.

Mr. Maslog is a consultant to the National Traffic Commission and a member of the Main Thoroughfares Committee of that body. He is a member of the Manila Traffic Committee and is a member of the Programming and Planning Committee created by the President of the Philippines for selection of highway and bridge projects to be financed by a bond issue.

FRANKLIN M. KREML

(Continued from page 323)

rector of the city's accident prevention bureau, the first of its kind in the country.

In 1936 Mr. Kreml organized the Traffic Institute and the Traffic Division of the International Association of Chiefs of Police and has been director of both organizations since that time. Staffs of these organizations have assisted in the training of some 10,000 persons having responsibilities in traffic, including police, traffic court judges and prosecutors, traffic engineers, motor vehicle fleet supervisors, driver licensing personnel, and driver education instructors.

Mr. Kreml has held numerous important posts in the National Safety Council including chairman of the Traffic and Transportation Conference, vice-chairman of the Board of Directors, and vice-president for Traffic and Transportation. He served as secretary of the Committee on Enforcement of the President's Highway Safety Conference and was one of the leaders who helped to organize the White House Conference on Highway Safety.

He has been named recipient of a number of awards in the traffic field, including the 1952 David Beecroft Award on Traffic Safety, annual presentation of the Society of Automotive Engineers. He is author of several books and numerous articles on traffic and transportation subjects.

Mr. Kreml served overseas in World War II with the Army Transportation Corps, receiving several decorations from the United States, Great Britain and Italy. He presently holds the rank of Colonel in the Organized Reserve.

JOHN T. HANNA

(Continued from page 323)

Union, secretary-treasurer of the Southern Section of the ITE, neighborhood commissioner of the Boy Scouts of America, and a bachelor.

M-B Model 618 — Fast, versatile, low priced marker with superior exclusive advantages. Marks curved or straight lines. 18 gal. capacity, with travel speeds 3 to 5 miles per hr. With built-in, ride-on trailer.

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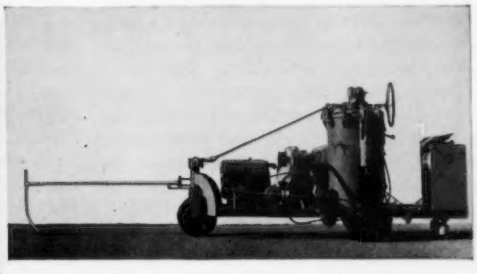

M-B Model 16 — All-purpose, self-propelled utility marker. Available with 18, 30 or 36 gal. capacity. Lays single or double lines, 2" to 6" wide — solid or intermittent (with attachment) — one or two colors.

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Miscellanea

Last fall a New England city closed a strategic bridge to all vehicular traffic while it was being reconstructed necessitating a detour several miles longer. A resident living in the west part of the city, working in the east part of the city, started parking on the west side of the bridge, walking across and taking a bus to his job. Every morning he noticed that the same car was parked at the east end of the bridge. Checking by the registration number he got in touch with the owner who lived in the east part of the city and worked in the west part and arranged a deal. Now, the two men drive to the respective ends of the bridge, meet in the center, exchange keys to the cars and then drive to their respective destinations. The same process is repeated in the afternoon. A similar occurrence was reported by the AP recently when a northbound motorist, blocked by a snow slide on an Oregon highway, walked around the slide to discover a southbound motorist similarly blocked. They exchanged vehicles and proceeded to their respective destinations. This might come under the head of working both sides of the street at the same time.

The grapevine reports that **Fenton (Jughead) Jordan**, Traffic Engineer from Norfolk, Virginia, was recently elected President of the Engineers Club of Hampton Roads, an organization composed of approximately 250 engineers of all kinds residing in the Norfolk, Portsmouth, Newport News, area of Virginia. This is the first time a traffic engineer has ever held office in this club. Congratulations to Jughead on his election which proves that traffic engineering is increasing in stature in the engineers' estimation also.

I hope that his new responsibilities will not be so great as to prevent him from writing an article for TRAFFIC ENGINEERING on the new downtown umbrella one-way street system in Norfolk which went into operation the middle of January. Jughead commented briefly on the proposed plan during the Kansas City Meeting. Instead of using an alternate pattern for the directions of one-way streets the four principal arteries in the central business district have been converted to one-way movement by making the two outside streets one-way northbound, and the two inside streets one-way southbound. It is reported that the new system is achieving some fantastic results in speed, volumes, etc. The plan gives much better control of the turning movements than the alternate system and since there are only two principal east-west arteries in the system the signal timing for the east-west streets works out quite well on a quarter offset timing plan. So look forward to an interesting article on the new system in a future issue.

Phil Ewart, Chief of the Traffic Engineering of the Quebec Roads Department, recently wrote an interesting article, "Factors in Long Range Planning of Highways," which appeared in Canada's Roads and Engineering Construction magazine. He outlines the plans for the Montreal region, control of filling stations, limited access, etc.

Many people say we are now living in the atomic age. This old surveyor finds that he has not even kept up with the electronic age. Comes now the story of a "geodimeter," invented by a Swedish Geodesist that precisely measures distances up to fifty miles by means of the measurement of the speed of light. The instrument is undergoing rigid tests at the Corps of Engineers Research Development Laboratories at Fort Belvoir, Virginia. The instrument is designed primarily for the determination of geodetic distances such as precise lines used in triangulation. The measurements are obtained by determining indirectly the time interval for a light beam to travel from the instrument to a distant plain mirror and return to the instrument. The weight of the entire unit, including its 300 watt portable engine generator is 327 pounds and measurements can normally be made in two or three hours using a procedure to obtain approximately 16 independent measurements. The computations can be accomplished in some 30 minutes as compared with the days and weeks required for the old triangulation computations. Speaking of the electronic age, it is noted that New York City has recently installed its first model 1033 traffic actuated control.

Helicopters seem destined to play an ever growing part in transportation. The Chairman of the Board, Eastern Lines, **Captain Eddie Rickenbacker**, predicts that some day helicopters will be carrying most of the short haul air traffic. TWA estimates one and a half million passengers annually by helicopter in the Washington, D. C., area by 1965. Southern California has a helicopter service which is to be extended. Forecasters are predicting the day when all downtown areas will be provided with a local transportation terminal featuring helicopters, buses, taxis and auto connections. Landing spaces for helicopters are called heliports and Houston, Texas, has already proposed a municipal heliport; also, a city helicopter fleet for use in unraveling traffic jams, fighting fires, making surveys and aiding with rescue work. The Los Angeles Board of Public Utilities predicts that passenger helicopters will be landing on office building tops within three years. The Army has already built the first exclusive heliport at Fort Eustis, Virginia. A combined heliport and parking garage is being planned for Brooklyn at a site near the St. George Hotel, whose President is heading the development corporation.

Providence, Rhode Island, has for many years been encouraging the provision of off-street parking facilities in the downtown areas. Their plans must be meeting with success, for recently someone whose initials are J. F. evidently alarmed at the trend projected it ahead to 1970, and wrote an article about his pessimistic findings which appeared in the Providence Journal, January 20, 1955. The article follows:

In Perspective— At Last! Parking for Everybody

Downtown Providence property owners knew what they were doing in tearing down theaters, business blocks and miscellaneous buildings to make way for parking lots.

The movement gained great headway in the 40's and 50's of the present century. Fays Theater in Union Street went the way of vaudeville, and the Carlton Theater in Mathewson Street went the way of one-night-stand companies and the aforesaid vaudeville.

Thriving saloons closed their doors and wreckers took the doors off the saloons and the saloons off the land earmarked for parking purposes.

Restaurants, which were feeding hundreds of persons daily, turned off their gas stoves or electric grilles, and were victims of the insatiable appetite of the parking lot craze.

By 1960, department stores had begun to yield to the press of the parking lot interests, and with the arrival of 1970, what had been Downtown Providence was unrecognizable to native sons and men of Brown, returning to the city after an absence of 20 years or so.

The Mall was still the Mall and General Burnside and the pigeons were still on hand, but most of the buildings that had once surrounded the city's famous breathing space were gone. Their places had been taken by parking lots.

City Hall, which should have been torn down long ago, still stood in its accustomed place, holding out against the advance of progress, as always.

However, it was a very lonely structure, with no other buildings to keep it company, and those in the know said it would soon come down, as a large parking lot concern was planning to foreclose a mortgage on the weary eyesore.

The State House slopes of lawn long since had been terraced for privately-owned parking

(Continued on page 333)

HENRY AND THE COMMON COUNCIL

By Bryan Wilson (Mem., ITE)

Traffic Engineer, Wisconsin Division, AAA, Madison, Wisconsin

Henry Glausson, traffic engineer of Mule's Head, population, 73,000, sat erectly at a desk in the large Council room. His posture was Yogi-like in its rigidity. His ascetic, impassive features gave no clue to the boiling cauldron of mental alchemy taking place in the area defined by his frontal, occipital and parietal bones. For Henry's big moment was at hand.

Around him sat the members of the Common Council, here legally assembled to see that nothing deleterious happened to the integrity and the honor of Mule's Head. In careless attitudes around a large, imposing table sat the Mayor, the Planning Engineer, Chief of Police, Fire Chief, City Clerk, and City Engineer.

On Henry's right, two cynical reporters smoked in obvious boredom. At the extreme rear, on a long, purposely hard bench, was the usual small group of curious, inhibited people representing the Public. Henry guessed that they were there to scoff, to protect their inalienable rights as citizens, and to be against anything of a constructive nature which might be proposed.

Henry thought ruefully of the talk he must make. He wished fervently that he had the personality of Maxwell Halsey; the intellect of Charlie Prisk; the fiery drive of Matt Sielski; the taste in ties of Joe Feuchter; the aplomb of Henry Evans; the authoritiveness of Don McNeil; and the scholarly appearance of Ed Johnston.

The Planning Engineer leaned over to Henry and whispered: "You'll never get an okay on one-way streets from these knotheads. They're too far back in Time."

The various voices droned on and on. A block of sidewalk on the east side of Fulsom Street was approved. Request for a fixed-time signal at Fifth Street and Olson Avenue was accepted by the Mayor for future study by the Traffic Engineer; one of the lady members talked at length on alleged speeding that was taking place in front of Lincoln School; approval of a new fire truck for the station in the Third Ward was discussed and action deferred until the next meeting. The drinking member from the Seventh Ward addressed pointed remarks to the Police Chief concerning a wanton female dog which was playing havoc with all the orderly dogs in the neighborhood. "Should have the animal impounded," he said in a loud, oracular voice, "for we are the People and must be respected!" He sat down triumphantly, glaring around for approval.

Zero hour for Henry was likely to occur at any moment. Swiftly he reviewed his proposed opening—a little story to awaken them; then a rehash of the advantages of a one-way street system; then, since he believed that thirteen of the seventeen Council members were sufficiently well-read and intelligent to respond to logical arguments, he planned individual approaches to the other four. Mr. Case was a businessman, but hard to convince of anything; Mr. Jones was a belligerent, blustering man who owned a powerful car and liked to speed; Mr. Sigler was deeply religious; Mrs. McCready was a hard worker in PTA, stern-visaged and masculine.

The Mayor arose and smilingly looked over the assemblage. He was easily the most distinguished-looking person in the room, and popular with the masses. His attitude was that of busy Commoner whose Civic Pride only had led him to accept the office of Mayor; but, having been drafted, was prepared to abide by the Will of the People.

"My friends and neighbors," he glowed, "we have finished all routine business that has come before us and are now prepared to listen to our Traffic Engineer, Mr. Henry Glausson, who will discuss a proposal for a system of one-way streets in this city. The streets involved are Newton Avenue and Seventeenth Street. These are, as you know, north-south streets, with Seventeenth Street carrying more traffic at present than it can handle without acute congestion. Mr. Glausson will now take over and explain to us this proposed innovation to our fair city." He smiled charmingly, nodded to Henry, and seated himself.

A naturally diffident man, Henry arose and looked over the odd assortment of faces turned up to him. He felt the old familiar dizziness and the tremor in the knees, which seemed as poignant as on the occasion of his first public address. Solemn, cherubic, even pitiable he appeared. Mrs. McCready thought: "If my wee bairn Willie had lived, he would be the age of this lad," and wiped a tear from her rough cheek. The slightly drunken Seventh Ward member glared intently at Henry, hiccoughed, and was reminded of a Springer Cocker he had once owned with just such an expression as Henry's. "Best dam dog a man ever had," he thought. "Good comrade and drank 'is beer right along with me like a man!" He felt warm toward Henry.

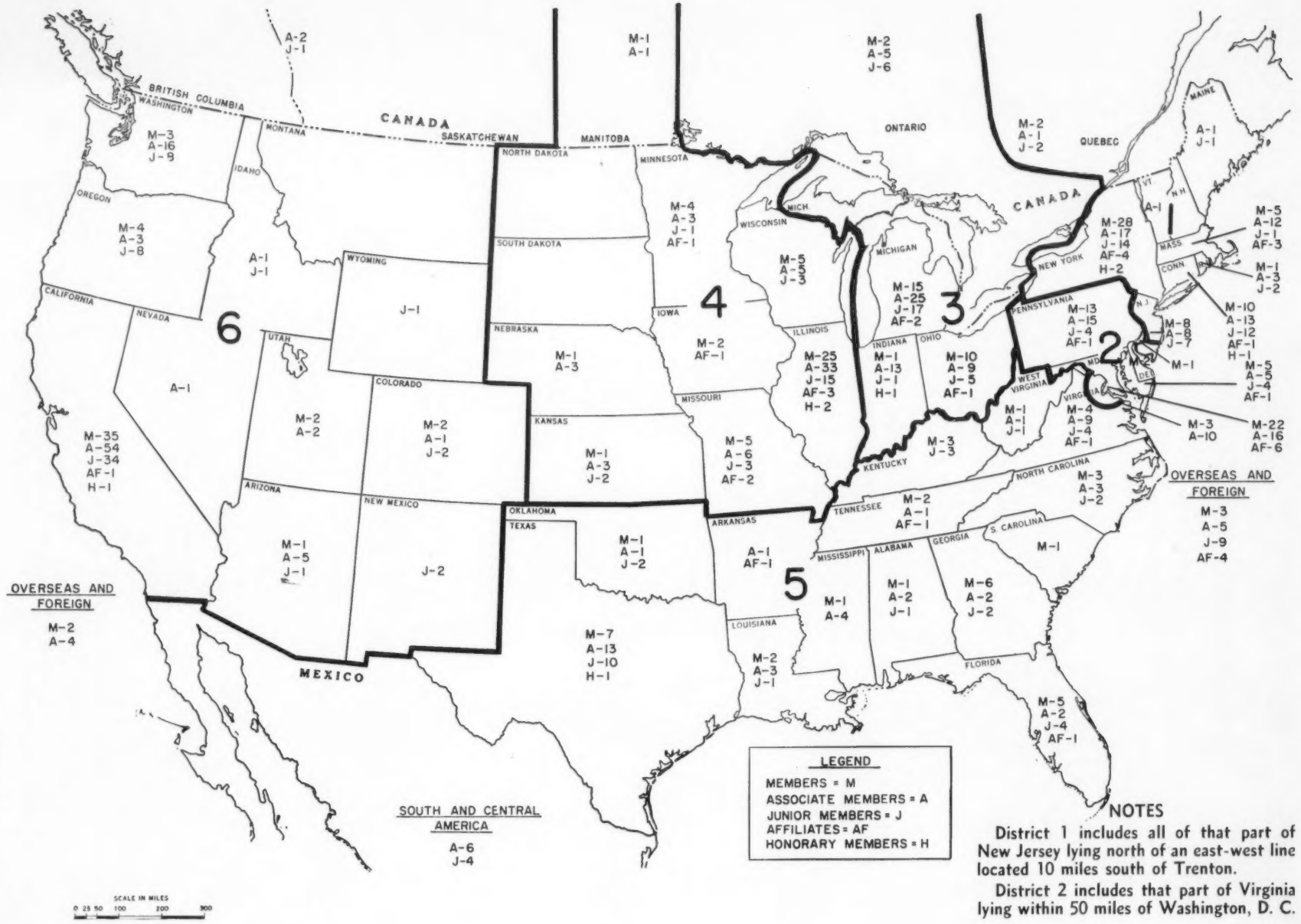
"Your Honor, and members of the Common Council," said Henry, "I appear before you this evening to offer a challenge—a challenge directed against congestion, accidents and intersectional and midblock frictions. You have all received a sketch depicting the streets on which it is proposed to have traffic in one direction only. Attached to this sketch was a memorandum explaining why such an action is considered necessary. This memo also listed all the advantages and disadvantages inherent in the one-way street systems that have proven so popular in the many cities that have installed them. Knowing this Council as I do—knowing your love of this beautiful city of Mule's Head — knowing the sacrifice you are making in order to better serve this city in which you have your businesses and your homes, I know that you have absorbed the arguments contained in the memo — have weighed them in your minds and have arrived at a decision concerning the proposed one-way street system presented to you at this time.

("Ye Gods," muttered the Planning Engineer in the Mayor's ear. "How corny can you get? And look at those pleased expressions on their faces! Bet a dollar none of them have looked at the memo!")

"I well know that this question of one-way streets has been a controversial one wherever it has come up. Cities considering such an innovation have been in the position of Hamlet as expressed in his famous soliloquy 'To be, or Not to Be.' Like Hamlet, they have been loath to press the bodkin into their bosoms for fear of what might come after — they have wondered whether it were not better to bear the evils they knew and were familiar with than to flee to others they wot not of, so to speak, which might be worse.

"Mrs. McCready and gentlemen! In other cities, before I discovered this lovely metropolis, I have had experience with this feared technique of one-

(Continued on page 330)



NOTES

District 1 includes all of that part of New Jersey lying north of an east-west line located 10 miles south of Trenton.

District 2 includes that part of Virginia lying within 50 miles of Washington, D. C.

INSTITUTE AFFAIRS
ITE DISTRICT MEMBERSHIP ANALYZED

The 1955 ITE Yearbook published last month lists the names and addresses of 855 members of the Institute. Last September the Board reaffirmed the boundaries of the six ITE districts which were first established in 1948. In preparing the geographical directory for the Yearbook the Headquarters staff also analyzed the distribution of the membership by grade, state and district. The results are shown on the map and in the following tables.

DISTRICT 1

State	Jrs.	Assoc.	Mem.	Affil.	Hon. M.	Total	Total Voting Members
Connecticut	12	13	10	1	1	37	23
Maine	1	1	0	0	0	2	1
Massachusetts	1	12	5	3	0	21	17
New Hampshire	0	0	0	0	0	0	0
New Jersey (except Camden)	7	8	8	0	0	23	16
New York	14	17	28	4	2	65	45
Rhode Island	2	3	1	0	0	6	4
Vermont	0	1	0	0	0	1	1
Overseas	1	1	1	0	0	3	2
Canada - Quebec	2	1	2	0	0	5	3
Belgium	1	0	0	0	0	1	0
Egypt	1	0	0	0	0	1	0
England	0	0	0	1	0	1	0
France	1	1	0	1	0	3	1
Israel	1	2	1	0	0	4	3
Netherlands	1	0	0	0	0	1	0
South Africa	1	0	1	2	0	4	1
Switzerland	1	1	0	0	0	2	1
Turkey	1	0	0	0	0	1	0
Totals	48	61	57	12	3	181	118

DISTRICT 2

Delaware	0	0	2	0	0	2	2
District of Columbia	0	16	22	6	0	44	38
Maryland	4	5	5	1	0	15	10
New Jersey (south half-Camden)	0	0	1	0	0	1	1
Pennsylvania	4	15	13	1	0	33	28
Virginia (within 50 miles of D. C.)	0	10	3	0	0	13	13
Totals	8	46	46	8	0	108	92

DISTRICT 3

State	Jrs.	Assoc.	Mem.	Affil.	Hon. M.	Total	Total Voting Members
Indiana	1	13	1	0	1	16	14
Michigan	17	25	15	2	0	59	40
Ohio	5	9	10	1	0	25	19
Canada - Ontario	6	5	2	0	0	13	7
Totals	29	52	28	3	1	113	80

DISTRICT 4

Illinois	15	33	25	3	2	78	58
Iowa	0	0	2	1	0	3	2
Kansas	2	3	1	0	0	6	4
Minnesota	1	3	4	1	0	9	7
Missouri	3	6	5	2	0	16	11
Nebraska	0	3	1	0	0	4	4
North Dakota	0	0	0	0	0	0	0
South Dakota	0	0	0	0	0	0	0
Wisconsin	3	5	5	0	0	13	10
Canada - Manitoba	0	1	1	0	0	2	2
Totals	24	54	44	7	2	131	98

DISTRICT 5

Alabama	1	2	1	0	0	4	3
Arkansas	0	1	0	1	0	2	1
Florida	4	2	5	1	0	12	7
Georgia	2	2	6	0	0	10	8
Kentucky	3	0	3	0	0	6	3
Louisiana	1	3	2	0	0	6	5
Mississippi	0	4	1	0	0	5	5
North Carolina	2	3	3	0	0	8	6
Oklahoma	2	1	1	0	0	4	2
South Carolina	0	0	1	0	0	1	1
Tennessee	0	1	2	1	0	4	3
Texas	10	13	7	0	1	31	20
Virginia (except within 50 mi. of D.C.)	4	9	4	1	0	18	13
West Virginia	1	1	1	0	0	3	2
Canal Zone	1	1	0	0	0	2	1
Chile	1	0	0	0	0	1	0
Cuba	0	2	0	0	0	2	2
Mexico	0	1	0	0	0	1	1
Peru	1	0	0	0	0	1	0
Puerto Rico	0	1	0	0	0	1	1
Venezuela	1	1	0	0	0	2	1
Totals	34	48	37	4	1	124	85

(Continued on next page)

DISTRICT 6

State	Jrs.	Assoc.	Mem.	Affil.	Hon. M.	Total	Total Voting Members
Arizona	1	5	1	0	0	7	6
California	34	54	35	1	1	125	89
Colorado	2	1	2	0	0	5	3
Idaho	1	1	0	0	0	2	1
Montana	0	0	0	0	0	0	0
Nevada	0	1	0	0	0	1	1
New Mexico	2	0	0	0	0	2	0
Oregon	8	3	4	0	0	15	7
Utah	0	2	2	0	0	4	4
Washington	8	16	3	0	0	27	19
Wyoming	1	0	0	0	0	1	0
Canada - Alberta, British Columbia & Saskatchewan	1	2	0	0	0	3	2
Hawaii	0	0	1	0	0	1	1
Overseas APO	0	0	0	0	0	0	0
India	0	1	0	0	0	1	1
New Zealand	0	3	0	0	0	3	3
Philippines	0	0	1	0	0	1	1
Totals	58	89	49	1	1	198	138

RECAPITULATION — DISTRICTS

	Rank	Jrs.	Assoc.	Mem.	Affil.	Hon. M.	Total	Total Voting Members
District 1	2	48	61	57	12	3	181	118
District 2	4	8	46	46	8	0	108	92
District 3	6	29	52	28	3	1	113	80
District 4	3	24	54	44	7	2	131	98
District 5	5	34	48	37	4	1	124	85
District 6	1	58	89	49	1	1	198	138
Totals		201	350	261	35	8	855	611

WILSON'S FRIEND

(Continued from page 327)

way streets. Believe me, there is no inherent harm in them — on the contrary, there is great good!

"I have always felt that cities have personalities like people. And why shouldn't they, composed, as they are, of people? Like people, they often endure an unpleasant situation rather than run the risk of yet other unpleasantness in correcting it. It's like a story I heard in which a man who had an extremely homely wife always took her with him wherever he went. A close friend said: 'Bill, just between us, we know that, despite her wonderful character, your wife is rather homely. Don't you agree?' 'Sure,' admitted Bill. 'She's more than homely — she's hideous!' 'Then, why,' asked the friend, 'do you always take her with you everywhere you go?' 'Well,' said Bill, 'The truth is that my woman is so plumb nauseating that I'd rather take her with me than to kiss her good-bye!'"

Only the Planning Engineer didn't laugh. He'd heard it a number of times before.

"Now, I know this group too well to doubt its decision on so important a matter as the installation of a one-way street system. I know that the good people here assembled want and will demand only the best for our beloved city. I know that because someone in his ward may have, through lack of knowledge, objected to this technique, that no single one of you will fail the city. You'll use your wonderful persuasive powers on such individuals and correct any mistaken impressions they may have. In other words you'll fight for and accept only what is best for the finest town in this state! You were elected because the people of your ward looked up to you and respected your integrity. They know your fierce pride in seeing that everything possible is done to make the city an even better place in which to live. They knew you'd never let them down!

"Mr. Case, you're a fine example of the business man who sacrifices his time to serve on this Council. You believe in graphs that show the progress of your business. You love to see this graph go up and up with never a trend in the opposite direction. Sir, a one-way street is like the graph of a successful business. The direction is one-way only — never a movement in the opposite or down direction.

"Mr. Sigler, I know you're a man of God. The whole city is aware of your good works both in church and private life. You hate a back-slider perhaps even more than any of us. Sir, a one-way street doesn't permit back-sliding. It goes forward, sir, and there's no room to back-slide, or go backward on such a street.

"Mr. Jones, I know you believe in progress and the efficient, safe movement of traffic. I assure you that on a properly designed one-way street you can travel faster and with greater safety, thus achieving efficiency of movement.

"Mrs. McCready, I know how concerned you are about our little children, our treasures, being able to cross streets safely. Let me assure you that it is safer for these little tikes to cross a one-way street, having to look only in one direction, than to cross a two-way street where it is necessary to look in two directions for safe crossing.

"Your Honor, and members of the Common Council, I thank you for your attention. In this era of change it is impossible to stand still in time. Whether we go forward to greater prosperity and safety on a one-way street, or whether we back-slide on a two-way street is your decision."

Henry sat down. Up jumped the Fire Chief. "Gentlemen," he began, "we have a fire station on Newton Avenue. What about the time I lose in going three blocks out of the way to a —?"

"Sit down, Chief," advised Mr. Sigler. "You know as well as I do that an emergency vehicle in this state can travel the wrong way down a one-way street. Safer, too, as everyone can see you coming and spread to the right and left to make way for you. I move that we write an ordinance making Newton Avenue a one-way street to the South, and Seventeenth Street one-way to the North. Don't want any back-sliding in this town."

"I second the motion," said Mr. Case, mumbling that a graph should go up and up.

"You have heard the motion, properly seconded. All in favor vote by saying 'Aye'," said the Mayor. A loud chorus of "Ayes" went up. "Those against say 'No'," said the Mayor. "The 'Ayes' have it."

The meeting rapidly broke up. Henry again sat dazed and aloof as the Mayor struck him on the back and whispered: "When I run for the Legislature, Henry, I want you to stump the cornbelt for me. Man, I'd never believed it if I hadn't seen it with these old eyes." He grinned and left, followed by the Planning Engineer, whose face was that of a man who'd actually seen a ghost, but still didn't quite believe it.

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- Attaches without removal of meter head on *any* standard meter post.

BOOK OF TICKET-ENVELOPES

Violation ticket envelopes are bound in sets of 25 units. Printed on high quality bond paper with envelopes constructed of weather proofed . . . kraft material, sealed with water resistant glue. Available at low, quantity prices.

Safe

Tough and durable, it provides vault-like protection to fine deposits.

Write Today . . .

DUNCAN PARKING METER CORP.

835 N. WOOD ST., CHICAGO 22, ILL.

FACTORIES: HARRISON, ARK. and MONTREAL, P.Q., CANADA

Manufacturers of fully automatic and manual parking meters.

CHECK THE WINNERS FOR LOW-COST STRIPING IN TOWN and FOR INDUSTRY

MODEL 8

Greatest air gun ratio in the industry

Like all Reflecto-Liners, Model 8 offers greater air gun ratio than any other striper its size. The 2:1 ratio of this machine is higher than you will ever need on ordinary marking projects and with its 3.6 hp air-cooled engine delivering 9.3 cfm at 80 psi, the Model 8 makes an ideal striper for in town and for industry.

MODEL 8T

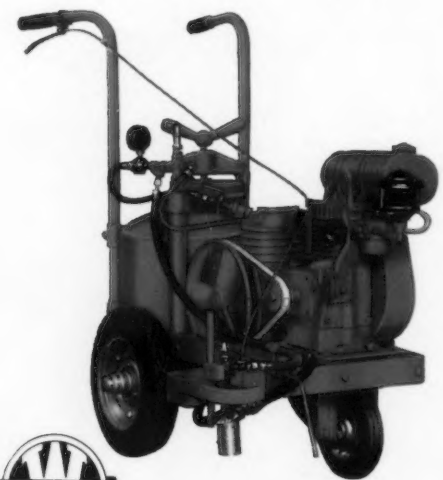
More than adequate air reserve

The 50% air reserve of this machine offers sufficient reserve power to insure continuous, high-output striping operations. Differing from the Model 8 only in the addition of a self-propelling traction assembly, the 8T handles all types of plain or reflective marking paints and gives clean-cut uniform lines of from 2 to 6 inches.

MODEL JR.

Precision equipment backed by continuous research

Here is a Reflecto-Liner that was designed for big machine performance in the low budget class. Like all Wald products, it is the result of continuing research which provides the industry with the very best in striping equipment. Laboratory designed and field tested, the Jr. is an example of the high Wald standards.



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1511

MISCELLANEA

(Continued from page 326)

lots, and there was some talk of leasing part of the State House itself, to "the interests."

S. J. Perliwelliger, head of the "Always Room for One More Auto Parking Corp.," had his own private parking lot, with room for all four of his cars, built on a slight elevation at one corner of his vast acreage in the former downtown area. A ramp led from the common parking lot to the special elevated space dedicated to the use of Mr. Perliwelliger and his four cars.

One enterprising parking lot man bought one of the last of the large downtown buildings, razed it and then divided it into 100 parking lot parcels, which he offered as individual parking places.

"Own Your Own Downtown Parking Space," he advertised. "Only five per cent down. Twenty-five years to pay balance. Pay like rent. Use lot in meantime. We will make all financial arrangements for you. Be independent in your parking."

He sold all the individual parking lots in less than a week and then retired to Foster, as much as it was possible to retire to Foster, for that once sparsely-settled town had become rather well built up, with very little true retiring room available.

Along about 1974, the people who were driving their cars to the parking lots of what had been Downtown Providence abruptly began asking themselves just why they were driving to what had been Downtown Providence and parking their cars there all day.

There was little or nothing to do in the great parking area except to park your car, watch others park their cars, enjoy the satisfaction of having a parking space for your car, and then taking part in the great operation of unscrambling the parking lot puzzle of intricately parked and packed cars.

A few of the bolder spirits—and there are always such in any era—went so far as to rebel against the idea of driving into what had once been Downtown Providence and parking their cars just for parking's sake.

Instead, they stayed wherever they were and let the former Downtown Business District be the former Downtown Business District. After all, there is a limit to the attractions afforded by a Central City of parking lots.

The rebellion grew in proportions, and the parking lot interests began to feel the pinch where they were most sensitive, their pocketbooks.

Something had to be done to hold the parkers, but no one came up with the right something.

Special parking rates didn't do it.

Offers of common decency by their parking lot attendants kept a few parkers in line a few days because of the parkers' curiosity.

But the big dwindle was on, and the parking lot interests began trying to unload their holdings.

It was at this point that an enterprising gentleman named Fred F. Frezbeham bought up a large acreage in the former Downtown Providence area, at Monday morning prices, fenced it off, and within no time at all opened a Drive-In Theater.

J. F.

POSITION AVAILABLE

CITY OF KANSAS CITY
MISSOURI

ASSISTANT TRAFFIC ENGINEER
To supervise work of subordinates in making traffic control studies, investigations and reports on traffic and parking problems, under supervision of superior with wide latitude for individual decisions.

Requirements: Three years practical experience in traffic engineering, one year of which shall have been in a supervisory capacity.

Salary $4740 - $5760 per year.
Merit examination required.
Apply: Personnel Department
City Hall, 11th & Oak
Kansas City, Missouri

No Bottleneck Here

Here's the way to handle those tricky intersections...where a full stop is not always necessary...but caution must be heeded. MIRO-FLEX YIELD SIGNS, recommended by the U. S. Public Roads Administration, handle the situation and still keep traffic flowing. Like all MIRO-FLEX signs, they are *embossed* for greater strength and readability. Finished with the best baked-on enamel on zinc-coated Bonderized steel, they assure you a lifetime of maintenance-free service. *Write for more information on* YIELD signs and the complete line of MIRO-FLEX traffic control signs.

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SECTION NEWS

WESTERN SECTION

From the April WesternITE.

Candidates for 1955-56 Western Section Year

Presidential Timber

Alexander L. Hutchison is the logical selection of your Nominating Committee to succeed his present position of Vice-President of WITE by being presented for election to the office of Presidency. In his present capacity **Al** (all his friends call him "Hutch") is familiar with the political intrigues of the National Board, as well as being "up" on local western affairs. It would indeed by a long "hoe" to "row" over rocky soil for a man without Hutch's background and astuteness for official functions.

Alexander has been a native Californian for 43 years. He has a B.S.C.E. degree from W.S.C., dated 1937, and is a Yale Bureau Boy of the 1947 vintage. Besides being an Associate Member of ITE, he is a Mason, Sigma Chi and Sigma Tau. Mr. Hutchison is a District Traffic Engineer of the Los Angeles Area for the California Highway Department. Mrs. Hutchison is the attractive mother of a son age 9 and a daughter 16.

Vice-Presidential Candidate

Allan R. Pepper is the perennial candidate for the Vice-Presidency, having appeared on the ballot for several successive years. **Al** is a likable chap who started to work with the Colorado Department of Highways in 1935 and has just completed 20 years with the Traffic Engineering office, being the administrator of that division since 1941. A leading contributor to WITE news and affairs, **Allan R.** is an engineering graduate of the University of Denver and has completed Yale Bureau short courses at Michigan and Georgia Tech.

A full member of ITE, **Al** is also active as Chairman of the AASHO Subcommittee on Traffic Control Devices, and the ITE Committee on Uphill Climbing Lanes. He further serves as Secretary to the Colorado Highway Safety Council. His social connections include the Sigma Alpha Epsilon fraternity and interests in competitive sports, as well as progressive Jazz. We don't know what Al's wife, **Sally**, thinks about the latter, but she probably has her hands full with their three sons, **Barry, David** and **Brian.** Al's exceptional achievements have all been accomplished in the relatively short span of 42 years since the time he became a native of the State of Colorado.

Vice-Presidential Nominee

Ellis L. Mathes is the worthy opponent of Mr. Pepper in the only current race for a Western Section office. **Ellis** is in the native Kansas corner and weighs in at an identical 42 years, which makes for an interesting contest. Other similarities include his position as Traffic Engineer for the Idaho Department of Highways, a member of the Idaho Safety Council, the AASHO Committee on Traffic, and the WASHO Committees on Uniform Traffic Control and Vehicle Sizes and Weights. He is also the National Director for Idaho in the National Society of Professional Engineers.

Ellis received his B.S.C.E. degree from the University of Idaho in 1938 and a Certificate in Transportation from the Bureau at Yale University in 1941. He has held several positions with the Idaho Department since 1933, including engineering, safety, maintenance and traffic. He is a licensed professional engineer in the State of Idaho, a Reserve officer and an Elk. He is married to a cute little gal called **Mabel** who has probably put no few rungs in his ladder of success.

Secretary-Treasurer

Melbourne H. West is the only candidate, to date, who has reared his unwary head for this, the "Work-horse" position in our Western Section Offices. He little suspects that 95 per cent of his waking hours are probably soon to be spent in balancing books, banging out editorials, dictating correspondence, posting bills, etc., so a few kind words in pre-memorium are his least due.

Mel hales from Illinois and makes the same claim as Jack Benny as far as his age is concerned. He received his education at Fresno State and U.C. In 1946, he attended the Yale Bureau to further his 25 years of experience with the California Department of Highways. The past 7 years, he has served as District Traffic Engineer with this organization. **Mel** is an Associate Member of ITE, a registered professional engineer and a retired Reserve Colonel. He and his wife, **Luzanne,** have three children, **David, Stephen** and **Christine,** who must not see much of their father these days since he is the General Chairman of the 1955 Western Section Annual Meeting in San Diego this June.

Eighth Annual Northwest Traffic Engineering Conference

The 8th ANWTEC was held at the State College of Washington in Pullman on March 16th, in conjunction with the 6th Annual Road Builders Clinic. Over 50 WITE's and other city, county and state engineers were in ses-

(Continued on page 337)

TUTHILL
DEEP BEAM TYPE
GUARD RAIL
cushions shock . . .
deflects cars safely

TUTHILL deep beam construction transmits impact to guard post, deflects and protects vehicle and occupants. Convex rail, secured to post with a single bolt, meets "deep beam" specifications . . . costs less to install, cuts maintenance. TUTHILL'S convex curve also gives highest visibility in darkness, rain or fog.

TUTHILL SPRING CO.

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PRELIMINARY PROGRAM

8th ANNUAL MEETING, WESTERN SECTION INSTITUTE OF TRAFFIC ENGINEERS

EL CORTEZ HOTEL — SAN DIEGO, CALIFORNIA

JUNE 22 - 24, 1955

WHO	WHAT	WHEN	WHERE
Ladies and Gentlemen	**REGISTRATION**	A. M. Wednesday	El Cortez
Committee Members	**COMMITTEE MEETINGS**	A. M. Wednesday	El Cortez
Members	**ANNUAL BUSINESS MEETING**	A. M. Wednesday	El Cortez
Men	**DON DIEGO KICK-OFF LUNCHEON**	Noon Wednesday	El Cortez
Ladies and Children	**LUNCHEON** **SIGHT-SEEING TOUR** **SWIM FOR CHILDREN**	P. M. Wednesday	La Jolla Beach and Tennis Club
Men	**GEOMETRIC DESIGN CONFERENCE** **(Sponsor ITTE and Western ITE)** **J. C. Young, California Division of Highways** **D. W. Loutzenheiser, BPR**	P. M. Wednesday	El Cortez
Ladies and Gentlemen	**WESTERN ITE'S CHUCK-WAGON BANQUET and SQUARE DANCE**	Wednesday Evening	La Jolla Beach and Tennis Club
Ladies and Gentlemen	**FLAPJACK ROUND-UP BREAKFAST**	A. M. Thursday	El Cortez
Children	**SUPERVISED FLAPJACK BREAKFAST**	A. M. Thursday	El Cortez
Ladies and Children	**SWIM PARTY AT HOTEL POOL** **SHOPPING**	A. M. Thursday	El Cortez
Ladies and Gentlemen	**REGISTRATION**	A. M. Thursday	El Cortez
Men	**WELCOMING SESSION** **President Western Section** **Mayor** **Chairman Board of Supervisors** **Joe Mattson, ASF**	A. M. Thursday	El Cortez
Men	**PAPER** **"Searching for Level of Transportation Service" — Norm. Kennedy**	A. M. Thursday	El Cortez
Ladies and Children	**LUNCH (At Pool — Side Tables)**	Noon Thursday	El Cortez
Ladies and Children	**EXCURSION — San Diego World Famous Zoo**	P. M. Thursday	Balboa Park
Men	**PAPER** **"Assignment of Traffic Engineering Responsibility" — J. H. Mathewson, UCLA**	P. M. Thursday	El Cortez
Men	**PANEL** **"Traffic Committees in Action"** **Mod.: G. P. Parmelee, ACSC**	P. M. Thursday	El Cortez
Men	**PANEL** **"What's New in the West"** Mod.: A. L. Hutchison, Calif. Div. Hwys. **Members: Traffic Engineers** **11 Western States**	P. M. Thursday	El Cortez
Ladies and Gentlemen	**NON TECHNICAL SESSION**	P. M. Thursday	El Cortez
Ladies and Gentlemen	**ANNUAL BANQUET**	P. M. Thursday	El Cortez
Ladies and Children	**BUS RIDE TO OLD MEXICO**	A. M. Friday	Tijuana
Men	**PANEL** **"Traffic Engineering — First Aid or Surgery"** **Mod.: Dick Gallagher** **Planted Discussion Leaders**	A. M. Friday	El Cortez
Men	**PANEL** **"Metropolitan Freeways In Retrospect"** **Mod.: Harmer Davis, ITE**	A. M. Friday	El Cortez
Ladies and Children	**LUNCH IN OLD MEXICO**	Noon Friday	Tijuana
Men	**TECHNICAL FIELD TRIP**	P. M. Friday	San Diego and Vicinity
Fishermen	**DEEP SEA FISHING TRIP**	A. M. Saturday	Pacific Ocean
Golfers	**GOLF**	A. M. Saturday	La Jolla Golf Course
Tennis Players	**TENNIS**	A. M. Saturday	La Jolla Beach and Tennis Club
All Vacationers	**DESCRIBED MOTOR TRIPS TO:** **Palomar Observatory** **San Juan Capistrano Mission** **Rosarita Beach, Mexico** **Ensenada, Mexico** **Cabrillo National Monument** **San Luis Rey Mission** **Borrego Springs** **Silver Strand State Park** **Old Town San Diego** **Scripps Institute of Oceanography**	Any Time	Anywhere

Grotelite REFLECTIVE SHEETING

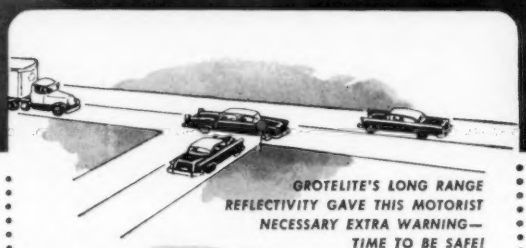
gives the motorist time to be safe!

STOP
AVERAGE STOPPING DISTANCE 132 FEET AT 40 M.P.H.
BRAKING DISTANCE
ALTHOUGH GROTELITE STILL CLEARLY LEGIBLE, IT'S TOO LATE TO HEED WARNING OF ANY TYPE IN THIS DANGER ZONE.
REACTION DISTANCE
GROTELITE SS CLEARLY LEGIBLE THROUGHOUT THIS DISTANCE!
GROTELITE SS VISIBLE HUNDREDS OF FEET BEFORE THIS POINT!

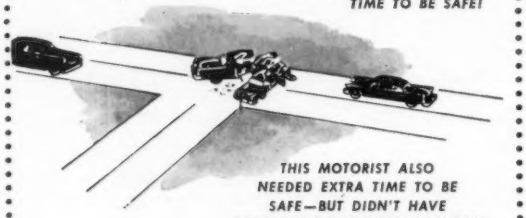
Too late to be warned, or *time* to be *safe* . . . Grotelite SS can make the difference! The traffic control sign reflectorized with Grotelite SS provides outstanding target value. It *alerts* and *warns* at the greatest distance from the point of danger. Through the blackest night, in any weather . . . Grotelite SS can be seen *farther*, seen *clearer*, seen *quicker* by the motorist!

Made For Maximum Warning!

Grotelite SS is the *improved Smooth Surface* reflex reflective sheeting. Formulated from *acrylic* (methylmethacrylate) plastic, it has over 26,000 optical lenses per square inch. Strongly reflects light beams directly to their source. Only Grotelite SS offers such long range brightness and clearness.



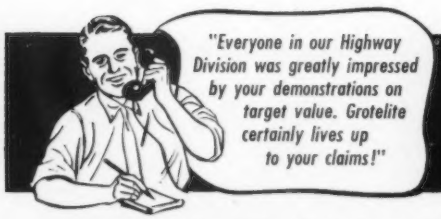
GROTELITE'S LONG RANGE REFLECTIVITY GAVE THIS MOTORIST NECESSARY EXTRA WARNING— TIME TO BE SAFE!



THIS MOTORIST ALSO NEEDED EXTRA TIME TO BE SAFE—BUT DIDN'T HAVE GROTELITE'S MAXIMUM WARNING!

GROTELITE SS is available in precut sheets for easy application. Also available on finished signs of all types. Four colors: yellow, red, green and silver (white).

Send *today* for Catalog No. 754-T . . . and for *complete facts!*


"Everyone in our Highway Division was greatly impressed by your demonstrations on target value. Grotelite certainly lives up to your claims!"

THE GROTE MANUFACTURING COMPANY, INC. • Established 1901 • Bellevue, Kentucky • Opposite Cincinnati

SECTION NEWS

(Continued from page 334)

sion for the day-long T.E. program. WITE members participating in the program, chairmanned by **Bob Dunn**, included such distinguished personages as: **Bruce Crandall, Bruce Culver, Jim Gallagher, "Squeege" Glaze, Roy Sawhill, Ellis Mathes, "Colonel" Bill Stancer, Rex Still** and **Bill Stockdale.** Other equally V.I.P.'s in attendance that are ITE'ers and fellow professional affiliates included: **Cy Cysewski, Jack Henderson, Bob Colpitts, Myron Mitchell, Jim Palmateer, Al Mathews, Ken Mandley, Bob Curry, Jim Small, Phil Brown, Bob Hansen, Herb Higgins, Bill Kingman, Dave Swanson, John Chaffee,** and the ever-present indomitable **"Skinny" DeYoung.**

The conference was highlighted by the presence of two local State Highway Commissioners and a keynote speech by the Washington Director of Highways, **W. A. Bugge,** who spoke on "The Traffic and Road Problem." Panel discussions moderated by **Still, Stancer** and **Sawhill** ably considered such weighty problems as: Aspects of Traffic Engineering, Fundamentals of Planning and Traffic Engineering, and The Winter Road Problem.

The entire 50-man session reconvened (straggled in would be more appropriate) for a banquet of barbequed short ribs, buffet style, that was arranged by Washington Co - Area Chairman **Bob Hansen,** with a short business session conducted under the auspices of Co-Chairman **Gerald Cysewski. Bob Dunn** seized upon the opportunity to pass on the results of the recent Board meeting held by **Head** and **Hutchison** in Berkeley. The one official piece of serious business conducted before the WITE representatives from Idaho, Oregon and Washington was the unanimous approval of the current proposal that the Board of Direction of the Western Section be increased from three to five members to include the immediate Past-President and the incumbent District Director.

Some Pealings from Idyho

Ellis Mathes, Traffic Engineer for the State of Idaho, flew to Charlotte, North Carolina as Idaho's National Director at the Spring meeting of the National Society of Professional Engineers.

Lew Ross, Assistant Traffic Engineer for the State of Idaho, was in attendance at the Urban Design and Traffic Control School conducted by the Bureau of Public Roads in Portland, February 28 to March 4, inclusive.

Idaho's first one-way couplet through the Pocatello downtown business area has now been in operation for several months. The conversion seems to be receiving favorable acceptance. It is anticipated that additional cross streets may be made one way as a result of the conversion.

The Traffic Department of the Idaho Department of Highways has been assigned the added resonsibility of preparing preliminary urban design and operational layout for all intersections on the State Highway System. In this respect, Traffic Engineering personnel has been increased by two designers and an illustrator.

Yodels from Yonder Mntns

At an all-day meeting of State and County highway officials at which the District Engineer and his staff played host, **Al Pepper** presented a series of case studies in traffic engineering to show County Commissioners and Road Superintendents how a moderate investment (under $100) in traffic control improvements can pay surprising dividends in highway accident reduction. Various critical locations on the County Road System were selected on the basis of actual or potential accident experience and minimum remedial controls were recommended. By means of a training aid called a "Visual Cast" collision and condition diagrams drawn on transparent acetate sheets were flashed on a screen for study and discussion and then overlays portraying the remedial controls were superim-

PRESCRIPTION Rx FOR BETTER TRAFFIC CONTROL

Traffic Control, parking, and parking enforcement can become an efficient and economical operation in your city —when you install the dependable KARPARK TWIN-O-MATIC or UNIMATIC parking meters. They're superbly built by the famous HERSCHEDE HALL CLOCK COMPANY, makers of America's finest clocks.

FLEXIBLE—
tailor-made to suit your own requirements for coin combinations and time intervals.

EFFICIENT—
simple to operate, highly visible for easy enforcement, ruggedly built for accurate timing in any kind of weather.

ECONOMICAL—
provide substantial savings in law enforcement, maintenance, and replacement.

KARPARK TWIN-O-MATIC
Times two cars with one installation. Adjusts to any desired change in regulations. Reduces maintenance and collection costs to unheard-of lows. Ruggedly built for long life.

KARPARK UNIMATIC
For single car parking. Can be used for an entire system of single car parking, or, when used with Twin-O-Matic, can be placed at street ends and special single locations.

Available with
Automatic Dump System, Sealable Boxes, or Open Top Boxes.

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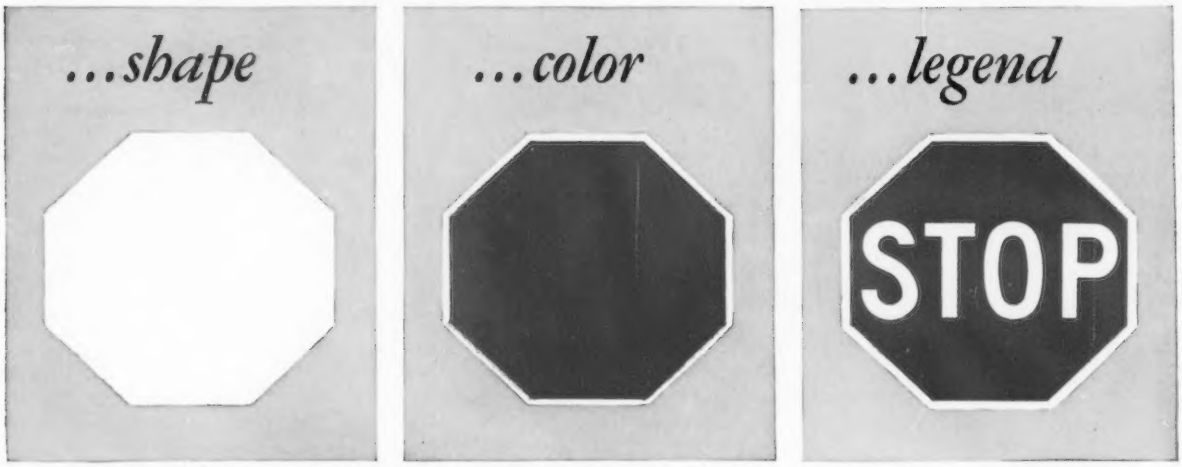
This sign says STOP...3 ways at once!



Day and night, rain or shine, red stop signs of "SCOTCHLITE" command attention

REFLECTIVE SHEETING

Now! You can make the switch to America's new stop sign standard* quickly, easily and at low cost. Signs of "Scotchlite" Sheeting give maximum brightness and visibility to shape, color, and legend 24 hours a day in all kinds of weather. *Here are 3 ways to do it!*

1. Buy the Ready-Made Alred-101. A finished sign faced with Wide Angle Flat-Top "Scotchlite" Reflective Sheeting. The ALRED-101 is mounted on 61S-T6, .081 aluminum, makes a sturdy, easy-to-maintain sign. 24", 30", or 36" sizes.

2. Buy Ready-to-Mount Sign Faces. Prepared faces of Wide Angle Flat-Top "Scotchlite" Sheeting come ready to apply to sign blanks in your vacuum applicator. Screened with BPR-standard shape, color, legend. A 24" face costs as little as $3.40.

3. If You Make Your Own! Use Wide Angle Flat-Top silver "Scotchlite" Sheeting and silk screen with "Scotchlite" No. 712 Stop Sign Transparent Red.

*See revisions to the Manual of Uniform Traffic Control Devices, Sept., 1954. Part 1, Section 29.

Complete details on reflectorized red stop signs upon request.
Write Dept. TE55, Minnesota Mining & Mfg. Co., St. Paul 6, Minn.

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posed upon the diagrams to create a "before-and-after" effect. At one hazardous location on the County system, the District forces actually installed the recommended improvements in traffic control and plan to conduct a before-and-after study of accident experience to illustrate the results which may be achieved through traffic engineering.

Moving Day for the Denver Area personnel of the Colorado Department of Highways is just around the corner. By early summer, the Department expects to house under one roof its office forces now scattered around the City of Denver.

To attract attention to a construction barricade on a State highway in the Denver metropolitan area and to induce drivers to slow down in advance of the barricade, vibration stripes were installed on the roadway to effect a decided change in the road noise and the driving feel of a car. These special markings consisted of a seal coat of stripes about ½" high painted diagonally across the highway and impregnated with fairly heavy stone chips. Lane markings were painted out to prevent interference. As an additional innovation to catch the eye of the driver, wind-activated "Whirligigs" fabricated with bright red and yellow reflective sheeting were installed above the barricade.

Paul Johnson, Traffic and Planning Engineer for the City of Pueblo, has been teaming up with the Civil Defense Director, the Fire Chief, and local P.T.A. officials in a drive to sell traffic engineering to the community. The sales promotion usually takes the form of discussion panels on the theme "What's Wrong with Traffic?" Incidentally, the City of Pueblo is embarking upon quite an ambitious program of striping and signal projects, and the public relations aspect is all important. As a further move in the right direction, Paul reports that his Assistant, **Sam Cocharo**, is now taking a special three-week traffic engineering course at the Northwestern Traffic Institute.

Denver's Traffic Engineer, **Jack Bruce**, reports an incident which occurred in the City of Denver suggesting a new and novel way to feed a parking meter. A Cadillac-mounted National Western Stock Show visitor from the wide-open spaces of Gunnison tethered his steed on Broadway, spent the afternoon in a local tavern and paid stall charges without once moving from his drink. Police said he merely took the parking meter into the tavern with him. While the curious watched, the cattleman punctually dropped a nickel into the meter every hour on the hour. He explained that the meter was loose and he simply lifted it bodily from the pole. **Jack Bruce** says that detachable meters might be regarded as a part of the city's courtesy program to visiting dignitaries.

MIDWEST SECTION

Clipped from April Midwest ITE*MS. **Dick Walons**, Editor.

Chicago Wins New Sign Shop

By a vote of 460,350 to 225,731, voters of Chicago approved a $750,000 bond issue for a new traffic sign shop in the recent mayoralty election. According to **Leslie J. Sorenson** the present shop has been used by the city since World War I and not even a board has been replaced since then.

The victory was achieved despite opposition from all but one Chicago newspaper and several prominent civic organizations.

The present building is a long and narrow wooden structure which has been condemned by the fire department. It houses a paint spray booth, blacksmith shop, and a carpentry shop. Added combustibility is in form of an old-fashioned gasoline pump which is used to fuel sign trucks.

Vehicles used by sign erection crews are stored in the building over night. Inasmuch as they occupy space that is normally used for production of signs and standards, these activities are delayed each day until trucks are loaded and gone for the day. Moreover, trucks cannot be loaded at night because of excessive crowding. Much valuable time is lost by shop as well as field crews as a result.

Sign shop crews erect or replace some 50,000 signs a year, install 10,000 temporary ones, and remove approximately 18,000 others. About 40,000 signs are cleaned. The shop now manufactures 27,000 signs annually with the balance of the city's requirements being purchased from suppliers. These quantities fall short of the city's needs, however.

Functional plans for a new and modern shop are being prepared by the Bureau of Street Traffic and Parking. Up-to-date manufacturing techniques, adequate storage facilities, and spacious truck loading platforms will be features of the new shop. Site for the shop has not as yet been selected. However, efforts are being made to acquire land under jurisdiction of other city departments.

Jesse Stars Again

Despite stiff competition from St. Patrick, **Jesse Owens** attracted a very pleasing number of Midwest-Ites and guests at the March 17th meeting. Several "regulars," however, were conspicuously absent, which is perhaps understandable in view of the happy holiday the City Fathers bestowed upon many.

SAFE-T-CONE

Patent Pending

ALL-RUBBER TRAFFIC GUIDES

Wherever traffic control becomes difficult . . . during rush hours, street repair or emergency, these big, "steel-like" rubber traffic cones demand motorists respect. Available in two sizes, 18 inch and 28 inch, painted or reflectorized.

Manufactured by

RADIATOR SPECIALTY COMPANY

CHARLOTTE, NORTH CAROLINA

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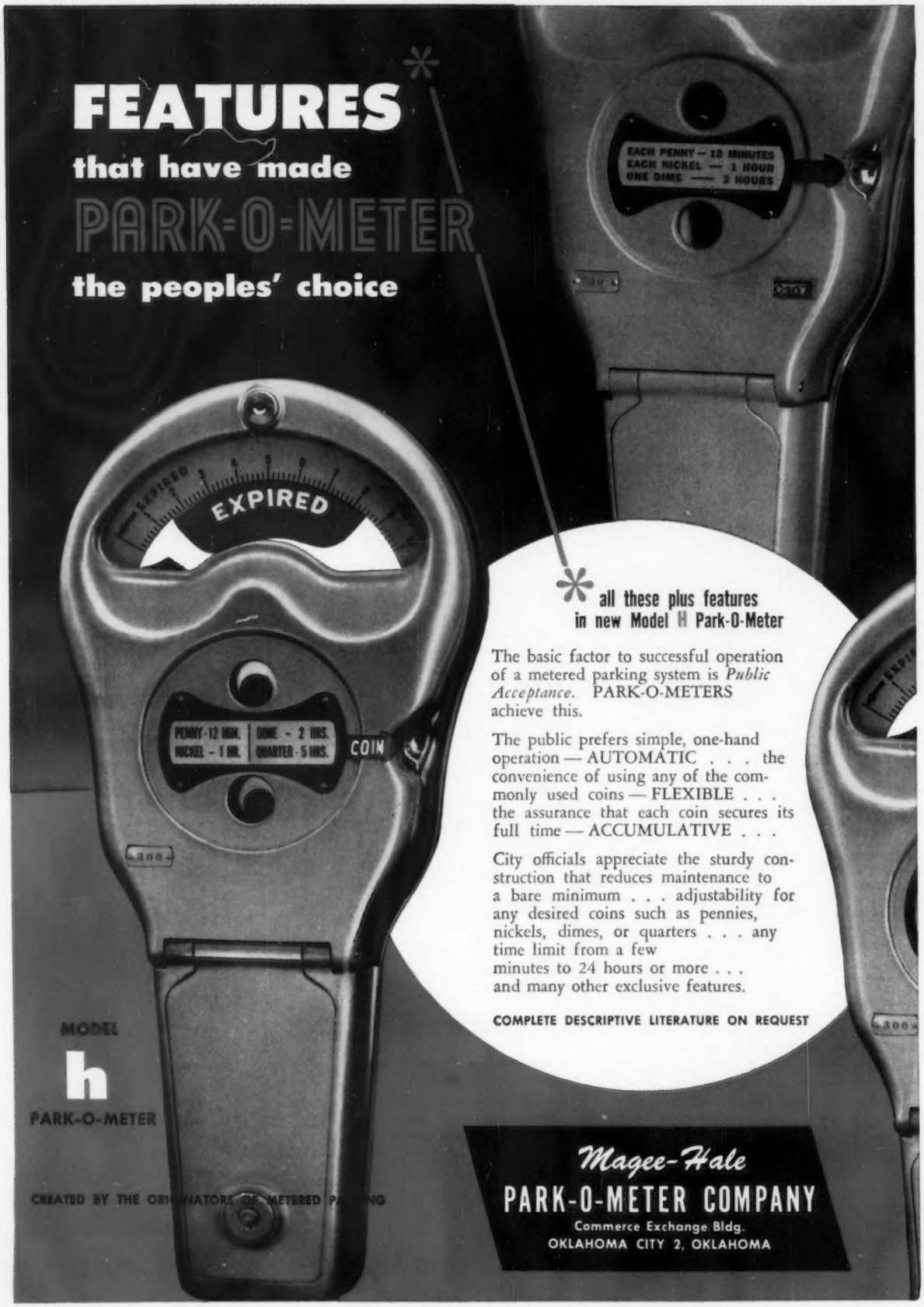
FEATURES*
that have made
PARK-O-METER
the peoples' choice



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The Indiana Section, ITE, elected new officers at its Annual Meeting which was held on April 14 during the Purdue Road School. Shown, left to right, are Donald W. Barry, Secretary-Treasurer; James T. White, Retiring President; James B. Neff, President; and John E. Baerwald, Vice-President.

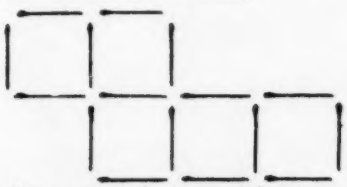
Thirty-five listened to **Jesse** give his opinions, views, and stories on sports. Despite the many world records he has achieved and held for so long, he can easily see them falling to others in a short time. **Jesse** believes our athletes improve each year and that new records will always be within their grasp. He was careful, though, to draw the line between realism and fantasy; a well-trained and conditioned athlete is the best found; there are no supermen.

Amid the many green ties at the meeting there were several unfamiliar faces. They belonged to traffic engineers from miscellaneous parts of the United States and Texas, here to attend the traffic engineering seminars at Northwestern University. And from all reports, they departed pleased with the dinner, meeting, and speaker.

Puzzle Corner

There's no trick to this one, but solving it is an accomplishment of considerable note.

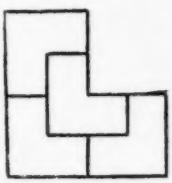
Set up the five squares shown below with matches (or the like).



Now move only two matches to new positions, so that there will be four squares of the same size. No matches can be alongside others, or be left outside the squares.

Last Month's Answer

Correct answers supplied by **Dick Kanak, Bob Harris, Dale Humphrey** (all the way from New Haven), **Mike Powills** and **Ted Siegel.** Congratulations, men.



Chatter

It seems that both the Park District and City disclaim ownership of Foster Avenue between Sheridan and the Drive. **Dave Baldwin** and **Charlie Michalski** stand ready to take it, provided they can get their toll booth up in time for the summer rush.

In accord with the finest of traditions, it naturally snowed on the first day of field work for **Dale Humphrey's** Yale thesis.

If the coming trip to Peoria next month doesn't bring back **Danny Hanson's** ulcers, we don't believe there's anything that will.

Understand that Skokie land values went up, not down, once **Mike Powills** moved into his new home.

Ralph Michel is in the process of investigating an electronic brain which IIT claims may soon answer our traffic problems. This is dangerous. Could be it might even take over **his** job, in time.

INDIANA SECTION NEWS

Many members of the Indiana Section attended the very enjoyable sessions of the 41st Annual Purdue Road School in April. The Institute was again well represented at the sessions of the Third Annual Traffic Control Conference held on Thursday and Friday, May 19 and 20. The Section has always cooperated in the presentation of these two worthwhile gatherings.

This year's Traffic Control Conference is spotlighting "The Parking Program." Among the ITE members appearing on the program are **Mel Pohlkotte, Bill Marston, Grant Mickle, Burton Marsh, Jim White, W. W. Harris, Hallie Myers,** and **Harold Michael.** Your reporter was conference director.

At the annual meeting of the Section, held during the Road School, the following officers were elected:

President—**James B. Neff.**
Vice-President—**John E. Baerwald.**
Secretary-Treas.—**Donald W. Barry.**

Reported by
John E. Baerwald
Secretary-Treasurer

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Yearbook Changes

ALVAREZ H., Luis E. (Junior)
Civil Engineer, Morandé 71, 8° Piso.— Dept. Construccion de Vialidad.—Santiago, Chile, S. A.

BERGSMAN, Seymour E. (Junior)
Senior Assistant Traffic Engineer, Department of Streets and Traffic, 15th Floor, Water Board Building, 735 Randolph, Detroit 26, Michigan.

CLINTON, Jean W. (Associate)
Senior Assistant Traffic Engineer, Department of Streets and Traffic, 15th Floor, Water Board Building, 735 Randolph, Detroit 26, Michigan.

DENTINO, Bruno (Member)
District Traffic Engineer, California Division of Highways, Box 1499, Sacramento, California.

DOBELEK, John J. (Member)
Senior Associate Traffic Engineer, Department of Streets and Traffic. SEND MAIL: 12344 Kentucky, Detroit 4, Michigan.

GROSS, Stanford P. (Junior)
Senior Assistant Traffic Engineer, Department of Streets and Traffic, 15th Floor, Water Board Building, 735 Randolph, Detroit 26, Michigan.

HARGER, Ross C. (Associate)
Assistant Director, Department of Streets and Traffic, 15th Floor, Water Board Building, 735 Randolph, Detroit 26, Michigan.

HARTLEY, John E. (Junior)
Assistant Traffic Engineer, Department of Streets and Traffic, 15th Floor, Water Board Building, 735 Randolph, Detroit 26, Michigan.

KAISER, Fred J., Jr. (Junior)
Senior Assistant Traffic Engineer, 15th Floor, Water Board Building, 735 Randolph, Detroit 26, Michigan.

KANSMAN, Sven (Associate)
Associate Traffic Engineer, Department of Streets and Traffic, 15th Floor, Water Board Building, 735 Randolph, Detroit 26, Michigan.

LEE, J. Duval (Associate)
City Traffic Engineer,, P. O. Box 60. 5-2503. SEND MAIL: 15 North Princeton Circle, Lynchburg, Virginia
(The 1955 Yearbook incorrectly shows Mr. Lee as a Junior Member)

LeROY, Holden M. (Member)
Senior Associate Traffic Engineer, Department of Streets and Traffic, 15th Floor, Water Board Building, 735 Randolph, Detroit 26, Michigan.

MALO, Alger F. (Member)
Director, Department of Streets and Traffic, 15th Floor, Water Board Building, 735 Randolph, Detroit 26, Michigan.

PETTERMAN, Jack L. (Associate)
Senior Assistant Traffic Engineer, Department of Streets and Traffic, 15th Floor, Water Board Building, 735 Randolph, Detroit 26, Michigan.

TOTH, Steve (Associate)
Senior Assistant Traffic Engineer, Department of Streets and Traffic, 15th Floor, Water Board Building, 735 Randolph, Detroit 26, Michigan.

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